

THE IRON AGE

THURSDAY, MARCH 7, 1889.

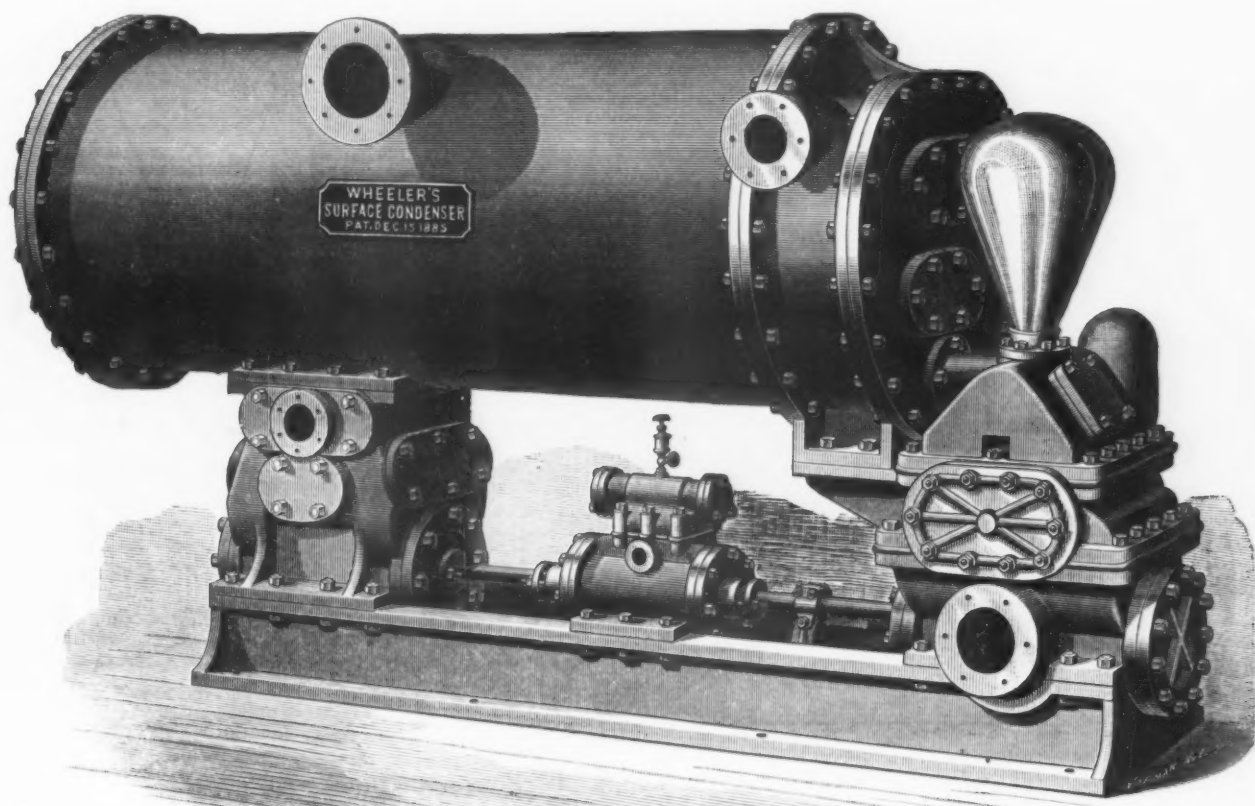
Wheeler's Surface Condenser.

The accompanying cuts illustrate the combination of the Wheeler surface condenser with independent system of air and circulating pumps. The condenser is mounted on the latter, thus saving floor space, which is of considerable importance in engine-rooms that are crowded with machinery. In this design the condenser is firmly bolted down on the pumps, the latter serving as a foundation, thereby saving expense of piping between the pumps and the condenser. As shown by the sectional view on the next page, the water pump delivers the circulating water through the nozzle C directly into the lower section of tubes in the condenser.

or similar materials. In fact, there are no ferrules, washers or packings of any kind employed. The tubes are of seamless brass tubing, carefully tinned inside and outside. They are arranged in pairs, the smaller tube inside of the larger. The latter is thickened at one end, on which a deep thread is chased. This end of the tube is screwed into a head of brass, and on the other end of the tube is screwed a cap, as shown. One end of the small tube is also drawn thick and a thread chased on it. This tube is also screwed into a head of brass. The tubes can be easily taken out and thoroughly cleaned, as their form and the manner of fastening permit of this being readily done. The tightly screwed fastenings of the tubes also permit the use of

Signaling from Mining Cages.

An efficient arrangement for signaling by means of electricity from cages in motion in shafts is described in a recent issue of *Engineering*. The object is attained by inserting an insulated copper wire in the hoisting rope and by connecting it at the cage end to an ordinary push button. At the drum end of the rope the insulated wire is brought out and connected to an insulated brass ring working upon the drum-shaft, and upon which a strip of copper rubs so as to maintain an electric connection with the signal bell and battery placed in front of the engineman. Those in the cage by touching the push can instantly communicate with the



WHEELER'S SURFACE CONDENSER, COMBINED WITH INDEPENDENT AIR AND CIRCULATING PUMP.

From thence the water flows by the passageway E into the chamber H, passing through the upper group of tubes, and finally discharging at the outlet nozzle D, as shown by the arrows. The exhaust steam, entering at the nozzle A, comes in contact with the scattering plate O, thereby distributing uniformly over the cooling surface of the tubes. The water of condensation gravitates to the bottom of the condenser, and flows directly to the air pump by the annular passage B, the air pump discharging the water and vapors through the outlet nozzle at the side of the cylinder. Both air and circulating pumps are operated by a direct-acting steam cylinder in the usual way.

In our issue of January 7, 1886, we gave a sectional view of this surface condenser, showing more of the details of construction. It may be well to state here, however, that the arrangement is one providing very thoroughly for the expansion and contraction of the tubes, and this without the use of tube packings of wood, paper

circulating water under pressure, which is often the case with stationary engines where the supply is from a head of considerable height. The circulation of water is very perfect, and consequently the smallest amount of cooling water is required. This feature gives a marked saving in the power necessary for the circulating pump. The condensers are made with bodies of both circular and rectangular shape. The larger sizes are usually of the latter design. The patentee and proprietor of these improved condensers is Frederick M. Wheeler, 93 Liberty street, New York.

The last of the large castings for the hull of the United States cruiser San Francisco, now being constructed at the Union Iron Works, was made at the Pacific Rolling Mills recently. The casting is of steel, and is the port strut for the port shaft of the vessel. The charge of metal in the furnace was 26,000 pounds, and the casting will weigh about 16,000 pounds.

engineman at any part of the lift, and signal to him to stop, or raise, or lower the cage. At the Newbattle Collieries, Dalkeith where the signaling apparatus is now working, it has been applied in the pumping shaft, 300 yards deep, and is specially used by the pump men for working at the pumps in different parts of the shaft. By means of the signal, standing in or upon the top of the cage, the men can instantly signal their requirements. Connections are also put upon the frame of each desk of the cage, so that coal work signals can be made by means of the rope at a great saving of time.

"The application appears," says our contemporary, "to be of special value in case of repairs in the shafts, affording as it does absolute safety to the occupants of the cage in making signals, and it would also be of inestimable value in cases of accident arising from explosion or break up in the winding shaft, where the state of the shaft or of the atmosphere is unknown, and where in such cases many

lives have been lost through the occupants of the cage having no means of signaling to the engineman. A case such as this was the well-known and recent case at the De Beers mine, in South Africa, where the cage and its occupants, including Mr. Lindsay, the manager, was lowered into a deadly atmosphere without means of preventing the descent after the cage left the surface."

Early Anthracite Furnaces.

Oliver Williams, of Catsauqua, reviews as follows the early history of the manufacture of anthracite pig iron in Pennsylvania, in a letter to a local newspaper:

In 1828 Neilson, of Scotland, patented the use of hot air in the smelting of iron ore in the blast furnace. The inventor "built better than he knew," as at that time anthracite coal was practically unknown in Scotland, and the use of his

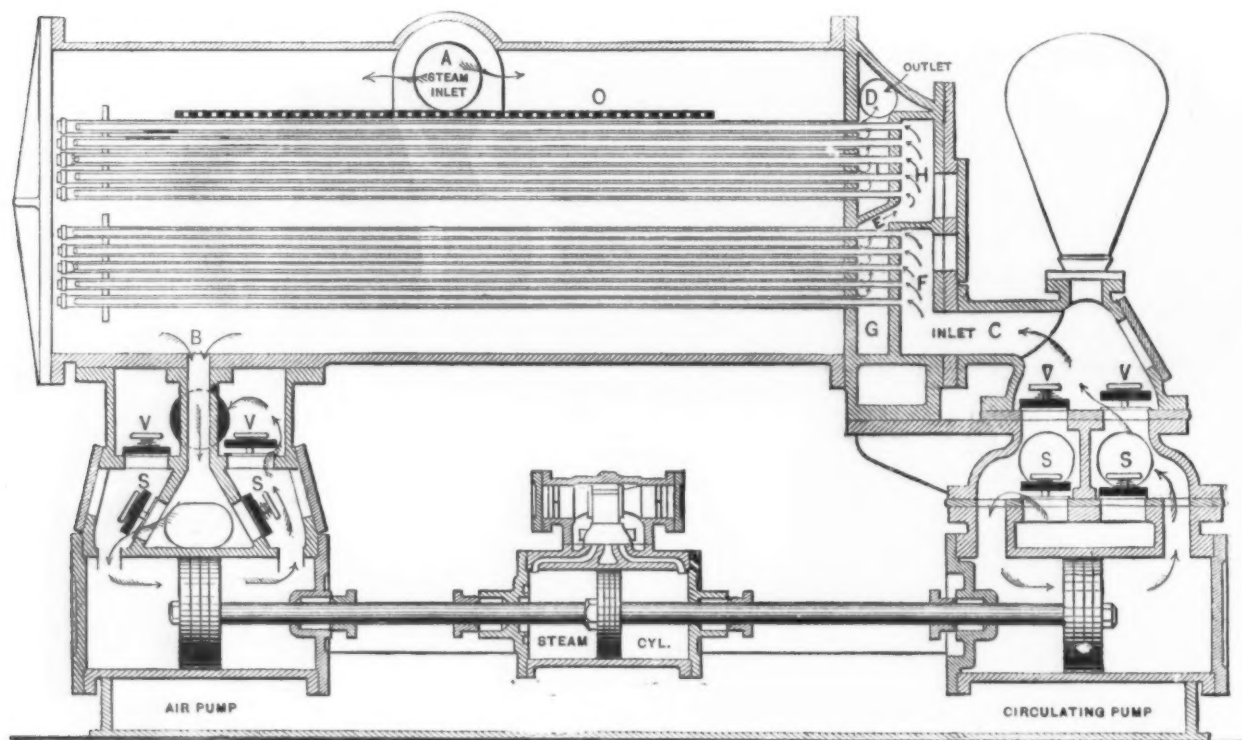
out Dr. Geissenhainer died, and American metallurgy suffered its first great loss.

While these experiments were going on at Silver Creek, John Potts was working on the same lines at Cressonia, Schuylkill County, and with commendable success; but, as in the case of the Valley Furnace, the Potts Furnace was too small and his blast too weak and cold. In 1838 a small furnace at Mauch Chunk was blown in on anthracite coal. It limped along for a few months, and was then blown out. It was again put in blast early in 1839, with an improved hot blast, but after running a short time was abandoned. Mr. F. C. Lathorp, an eminent engineer—still living, I believe, at Trenton, N. J.—was connected with this enterprise, and is fully qualified to write an interesting chapter on the early history of anthracite pig iron.

In 1838 Burch Patterson commenced the erection of the Pioneer Furnace at Pottsville. He engaged Mr. William Lyman, who had been connected with a

These experiments were all being watched by the Lehigh Coal and Navigation Company with intense interest. It is but rarely that so great an amount of brains was ever concentrated in the skulls of a company as was developed in the heads of this company. Two men especially connected with the management—Josiah White and Erskine Hazard, both of Philadelphia—were marvels of foresightedness, indomitable energy and untiring industry. Mr. White was a strict Friend, which must have been a great trial to him sometimes when his plans went awry through the stupidity of his agents.

Philadelphia has erected monuments to many men who have not done one-tenth of what these men did to pour gold into her lap. Mr. White and Mr. Hazard saw that the time had now arrived for them to move in the matter of pig-iron making. Mr. Hazard was sent over to Wales, and there found Mr. Crane's furnace successfully smelting iron ores with anthracite



SECTIONAL ELEVATION OF WHEELER'S SURFACE CONDENSER.

patent was confined to smelting with bituminous coal. In 1836 George Crane, of Wales, obtained a British patent for the use of the hot blast in connection with anthracite coal. Mr. Crane at that time owned an anthracite coal mine at Yniscedwin, South Wales, that was valuable to him. Mr. Crane, in connection with Mr. David Thomas, at once proceeded to change a furnace that had been run on coke, to use anthracite. This furnace was put in blast early in 1837, and it was a complete success from the start. Prior to this Dr. Geissenhainer, a Lutheran clergyman of New York City, a man deeply interested in the sciences and evidently well informed as to Neilson's discovery, and fully appreciating its value as connected with the use of anthracite coal, commenced the erection of a blast furnace on Silver Creek, about seven miles from Pottsville. This was known as the Valley Furnace, and was blown in some time in July, 1836. This furnace continued in blast some ten or twelve weeks, using anthracite coal exclusively. The furnace was small, the pressure of blast about 3 pounds, with a temperature of only some 200° F. Unfortunately, soon after the furnace was blown

rolling mill in Boston, as manager. It was first blown in on the 10th of July, 1839. It continued in blast but a few days, and was shoveled out. Benjamin Parry, who had worked at Yniscedwin with David Thomas, took the position of founder. The furnace was again blown in some time in October, 1839. Mr. Thomas was then in Catsauqua, and Mr. Parry sent for him to come to Pottsville for aid and counsel. Mr. Thomas, accompanied by his son Samuel, then a mere stripling, but now eminent in the trade, drove over to Pottsville and remained there for a week, during which time Pioneer was for the second time blown in. As stated by Mr. Jenks, this furnace then ran successfully, but only for a long enough time to secure the premium of \$5000 (not \$12,000, as stated by Mr. Jenks) offered by Nicholas Biddle to the first person who would make anthracite pig iron continuously for three months. Owing to the poor supply of ores in the vicinity, Pioneer was blown out early in 1840, and remained idle for some time. During the year 1840 several small furnaces were blown in at different points in Eastern Pennsylvania, but none of them proved a commercial success.

coal exclusively, under the management of David Thomas. Mr. Hazard at once contracted with Mr. Thomas to come to this country and erect a furnace. Mr. Thomas arrived here June 5, 1839, and promptly commenced building a furnace at Craneville, now Catsauqua, on the banks of the Lehigh Canal. This furnace, though small, was of far more generous proportions than any of its American predecessors. It was supplied with an improved hot-blast oven capable of heating the air to about 600° F., and with a blowing apparatus giving the pressure of about six pounds to the square inch. Mr. Thomas blew this furnace in July 3, 1840; made his first cast July 4, 1840; continued it in blast—with, of course, the necessary renewals—until 1879, when it was replaced by a furnace of more modern design. This furnace not only made iron, but, equally as important, made money from the word "go." Mr. Thomas followed this up by building the magnificent plants of the Crane and the Thomas Iron Companies, earned for himself the honor of having been the first man in this country to successfully and profitably establish the manufacture of anthracite pig iron, and as such is fairly entitled to

the monument which I trust will be dedicated to his memory on the 4th day of July, 1890.

The Factory Mutual Insurance Companies.

Edward Atkinson, the president of the Associated Factory Mutual Insurance Companies, has published his joint report for the year 1888, 19 companies in New England and Pennsylvania being members of the association. The premiums received in gross in 1888 amounted to \$4,462,059.90, of which \$146,254.99 was returned on policies canceled. The risks, written at the average rate of 0.9081, amounted to \$491,366,988, the net risks carried 12 months being \$475,261,438. The losses incurred were \$848,068.50, a percentage to net premium of 19.65, or 17.84 cents loss per \$100 of risks carried 12 months. The premiums on risks terminated in 1888, on policies issued in 1887, figured up \$4,055,827.78. The dividends returned on the same were \$3,062,306.86, or 75.5 per cent. The average rate of premium charged in 1887 on policies which terminated in 1888 was 89.34 cents per \$100 of risks taken. Deducting the dividend of 75½ per cent., leaves the net cost of insurance, including losses, expenses and taxes, 21.89 cents per \$100. On the 31st of December last the risks outstanding were \$473,928,628.

The practically concurrent action of all the mutual companies and the establishment of systematic and regular inspections of all risks began in 1878. In 1879 the conclusion was reached that the increase of property at risk in almost all mill yards required additional safeguards, which were steadily called for until nearly all risks were protected with suitable apparatus, at the present standard of adequate protection, in or about the year 1883.

Since that date the members have had a right to expect an increase in the percentage of their annual dividends, even though a concession in the rates of premium varying from 5 cents to 25 cents on each \$100 of risks carried has been made in consideration of the additional safeguards called for. Too much clerical work would be required to determine the exact sum of the concessions in the rate of premium. It is computed at not less than \$3,000,000 during the last ten years. Had the old rates been continued, and had this additional sum been paid in to the companies, it would all have been returned in the form of dividends. The average rate of premium placed on deposit with the mutual companies, at the reduction granted during the last five years, has varied but a fraction from 90 cents on each \$100 of risks insured.

The gain in dividends has been as follows:

	Premiums on expired policies.	Dividends.	Per cent.
1884.....	\$3,047,008.81	\$2,047,328.55	67.20
1885.....	3,259,548.32	2,416,419.04	74.12
1886.....	3,485,827.86	2,708,897.50	77.71
1887.....	3,763,203.41	2,667,154.88	70.88
1888.....	4,055,827.78	3,062,306.86	75.50
	\$17,611,416.18	\$12,902,073.83	73.25

The steady progress in preventing loss by fire is most conclusively proved by the regular increase in the rate of dividend.

Per cent.

The dividend of all companies from the respective dates of their organization up to December 31, 1878, the year in which concurrent action and joint inspection were established, had been at the average rate of.....	60.925
In the last five years of this period the increase in risks taken had not been coupled with increased protection, and the average rate of dividend was only.....	59
In the years 1878 to 1883 a steady pressure was exerted for improvement, and from 1884 to 1888, inclusive, the average dividend as above given has been.....	73.26
In the year 1888, taken separately....	75.50

The gain to all members from the concession in rates, with the actual gain in dividends on the reduced rates added thereto, is computed at not less than \$5,000,000 in ten years—1879 to 1888 inclusive—which sum would far more than suffice to cover the estimated cost of all the additional safeguards which have been called for.

STATEMENT NO. 4.

Cost of insurance in 19 factory mutual Insurance Companies from the date of their organization, respectively, to December 31, 1888, assuming that all risks should be re-insured on that day, and one-half the premiums received in 1888 applied thereto:

Total amount of risks written.....	\$5,600,580,734.00
Premiums received thereon.....	\$49,347,370.01
Dividends made thereon.....	\$30,633,720.60
Value of assets, \$1,847,208.13. Less deduction for re-insurance.	\$2,157,902.45
	2,489,305.68
	33,123,026.28
The remainder constitutes the cost of insurance.....	\$16,224,343.73

On this basis the cost of insurance has been 28½ cents on each \$100 of risks taken—equal to 32.08 per cent. of the premiums received, but through cancellation from time to time, and by computation for the cancellation of policies which had not terminated December 31, 1888, the amount of risks above written would be somewhat more than had been carried a full term of 12 months. Making allowance for this element of cancellation, the actual cost of insurance for full 12 months on each \$100 of risks taken may be computed at 30 cents per \$100, and the proportion of premium required to meet losses, expenses and taxes may be considered substantially 33½ per cent. of the premium received.

The system of inspection has been more fully perfected during the last year. Additional experts and employees have been required for making special inspections, laying out fire protection, making plans and the like. The cost of this service is assessed in proportion to the amount of risk carried by each company at the end of each year, and, while the increase in the number of risks has called for some additional expense in the aggregate, the proportionate expense to the amount of work done has not been increased, but has of late slightly diminished. According to the experience of the last few years, the cost of general and special inspection, making plans, printing and distributing documents, making special investigations of oil, hose, sprinklers, &c., comes to \$150 per year on each \$1,000,000 of risks insured.

Labor in Connecticut.

The fourth annual report of the Connecticut Bureau of Labor Statistics has been issued. It is an important and interesting work. It opens with the statement of the result of the figures and information taken from the books and payrolls of 90 establishments, representing 20 lines of manufacture, in the State. In the fall of 1887 investigation had shown that the real cause of dissatisfaction on the part of the laboring people was that their wages were not just in proportion to the profits received by their employers. On the other hand, employers believed that wages were as high as the condition of business would justify, and that any considerable advance would necessitate the closing of many of the factories and workshops in the State. In many instances, it was asserted, factories were run at a positive loss. As this was the real question, it was decided by the Labor Bureau to enter upon an investigation of wages, cost of living and profits of business in the order named.

The report says there is now far less complaint of unreasoning and unthinking agitation among such employees than before, and a noticeable willingness to adjust questions on reasonable terms. But while there is an abandonment of industrial warfare among the laboring people there is a deep-seated conviction that laborers are losing ground in the industrial turmoil, and that rapidly-changing conditions and methods of production are crowding the workmen into closer and closer lines of activity and reducing the number and range of their occupations and their wages without a corresponding reduction in the cost of living; diminishing the number of small manufacturers and multiplying the number of wage earners as these are crowded out by the large corporations. Just where the trouble lies, or what it is, is not clear to their minds, but in some general way it is summed up that the laborer's share is not in just proportion to his employer's, and that his opportunities to rise are diminished.

When the manufacturers were questioned, the wages of the present time were compared with those of 1860, and in this examination it was found that many of the officials of the concerns now were formerly common laborers in the same employ. In many of these corporations the ranks of laborers are carefully watched for men having the necessary qualifications for advancement; hence the report says it is a mistake for the laboring man, because the conditions of his lot seem hard, to relax his efforts to do his best at all times. The contract system of work in many factories, it is said, gives money to contractors which ought to go to laborers; and it does so because laboring men have not been wise enough to make it for their employers' interest to dispense with the middleman. The plan of weekly payments has gained in favor during the past year. It is very generally favored, but some of the corporations have not yet adopted it; and this is probably the most fruitful source of complaint among the laboring people to-day, as the non-adoption is regarded as a sort of intimidation.

The law limiting the work for women and children to 60 hours per week is generally conscientiously obeyed, but that compelling the attendance of children under 13 years of age at school is enforced with difficulty, unscrupulous parents resorting to various subterfuges to keep their children at work in the mills. Commissioner Hotchkiss, in conclusion, deprecates the blacklisting of employees and the boycotting of employers, and says they are both relics of barbarism, and that their very names should be forgotten. Under the head of manufactures it is shown that the 90 establishments above referred to manufactured in 1887 goods to the value of \$46,618,192.80, at a net profit of \$2,868,191.75. The wages of the 28,256 hands employed amounted to 29.17 per cent. of the cost of goods manufactured, or \$12,470,277.87. The statistics on comparative wages and the cost of food, 1860 to 1887, show that there has been an average advance in the wages of males in the occupations shown since 1860 of 43 per cent. and of females 57 per cent.

A number of Chicago manufacturers were burned out by a fire at 63 and 65 South Canal street, on the 24th inst. The basement was occupied by W. H. Casper & Co., manufacturers of metallic weather strips, and H. S. Holden, manufacturer of gas fixtures. The first floor was used by Goodell & Waters, manufacturers of wood-working machinery. Underwood & Co., manufacturers of belting, were on the third floor. All lost quite heavily, but were fully insured. This building was rebuilt last April after having been partially destroyed by fire.

Great Britain's Coal Supply.

R. Price-Williams, in a paper before the British Statistical Society, follows very closely in his argument concerning the exhaustion of England's coal resources the methods of Prof. Stanley Jevons and of the Royal Commission of 1866. In 1871 the commissioners reported a period of 350 years as the length of time assigned for the working out of the coal supply of the United Kingdom. According to Mr. Price-Williams, this is an over-estimate, and, assuming that the report of the Royal Commission was based on sufficient data, he is certainly justified in the conclusions he has arrived at. That these latter are very startling, it must be confessed. Mr. Price-Williams states that, at the present rate of consumption, all the known sources of supply, with the solitary exception of the Debigshire and Flintshire coal fields, will be exhausted by the year 1983. The western division of South Wales, with its invaluable steam coals, will be exhausted in 46 years; Warwickshire will cease to produce coal in 53 years; Scotland will in 92 years have to seek its fuel elsewhere, and in two years more even Northumberland and Durham will be denuded of their mineral wealth. Of course Mr. Price-Williams's argument depends upon the maintenance of the present average rate of output, but, even if that rate is reduced, it is obvious that the only result will be a proportionate addition to the number of years which must elapse before the inevitable exhaustion is accomplished. The author of the paper and several of the speakers who followed him very fairly alluded to the great economy of fuel in modern methods for the manufacture of steel, and consequent on the introduction of double and triple expansion engines. These economies, however, cannot materially affect the ever-increasing growth of the coal exports, for which there is no remedy. Any idea of an export duty is quite out of the question, for, as was pointed out, England, with its vast carrying trade, is, and must ever be, so long as that trade exists, the chief benefiter from her coal exports. The only remedy for the evil pointed out is the exercise of judicious economy in the use of that most precious gift which nature has bestowed.

A General Bankruptcy Law.—A movement in favor of a general bankruptcy law has been initiated by the wholesale grocers of St. Louis, and at a convention held in that city last week nearly all the boards of trade and financial organizations in our leading cities were represented by delegates. Col. J. L. Torrey, of St. Louis, was made permanent chairman, and George H. Stone, of Chicago, secretary. John H. Goddard, president of the Wholesale Grocers' Association, said, in stating the object of the convention: "A national law that will provide for the honest collection and disbursement of the assets of an insolvent debtor. We want this law so framed that it will accomplish its work quickly and economically. It must be a stringent law, one that will punish the fraudulent debtor, so far, at least, as to make him liable for his debts until they are paid, while at the same time it will not crush the poor but honest debtor, and prevent him from again engaging in business. We believe that all creditors should share fairly and proportionately in the assets of the debtors." Before adjourning, the convention passed resolutions urging upon Congress the adoption of the Lowell bill, passed by the Senate, as the basis of the desired legislation.

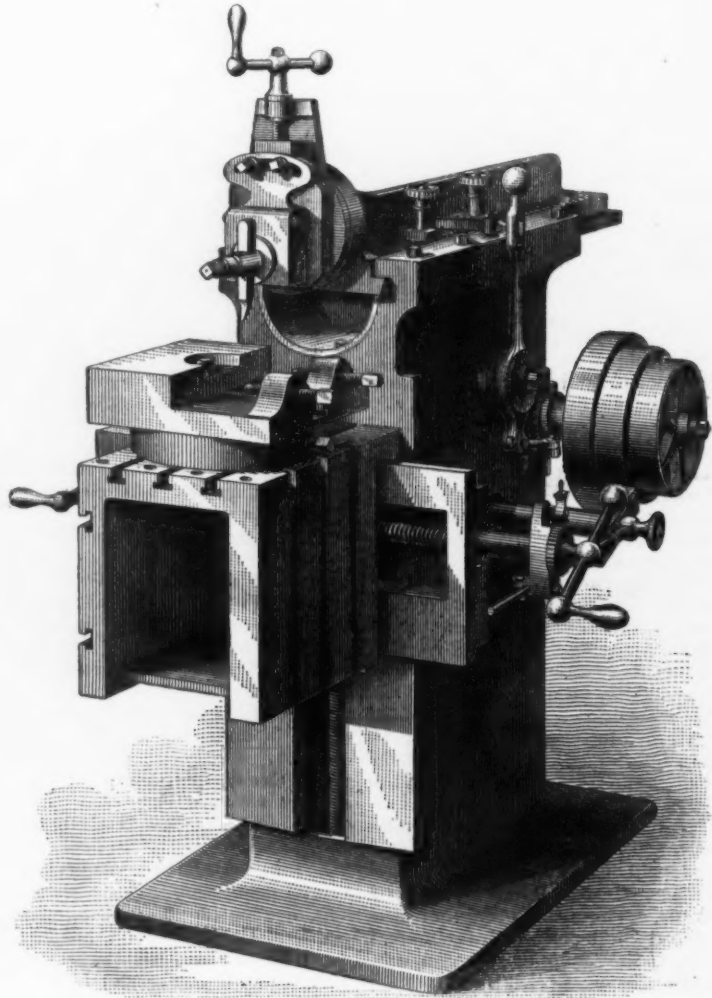
The Pennsylvania repair shops at Pittsburgh will be removed to Watts Station, 14 miles distant, and roundhouses to hold 300 engines will be built at the

same point, where 300 men are engaged in changing the bed of Turtle Creek for over a mile, thus reclaiming a large track of waste land for the new location.

The Prentiss Friction Shaper.

By shifting the tappets, or dogs, which are similar to those in general use, the stroke of this machine can be changed without stopping to any length from $\frac{1}{4}$ inch to its full extent. There are two different speeds for cutting hard or soft metals, and the return stroke is 40 per cent. quicker than the cutting stroke. The grip is produced by two leather surfaces brought together in such a way as to

contracted, and its leather lining is pressed either against the inside of the outer pulley *g*, the top of which runs toward the front of the machine, or it is pressed around the outside of the inner pulley, which runs in the opposite direction. Both pulleys are driven from the same countershaft, one with open and the other with crossed belt. The pulleys have long hubs, and are loose on the shaft. One of the arms, *f*, is fastened to the shaft, thus imparting either a forward or backward motion. On the shaft is mounted a pinion, which engages with a large intermediate gear, *h*, loosely fitted on shaft 2. On the arms of this gear is a ring turned on the inner side to receive, under friction, a leather-faced steel spring having

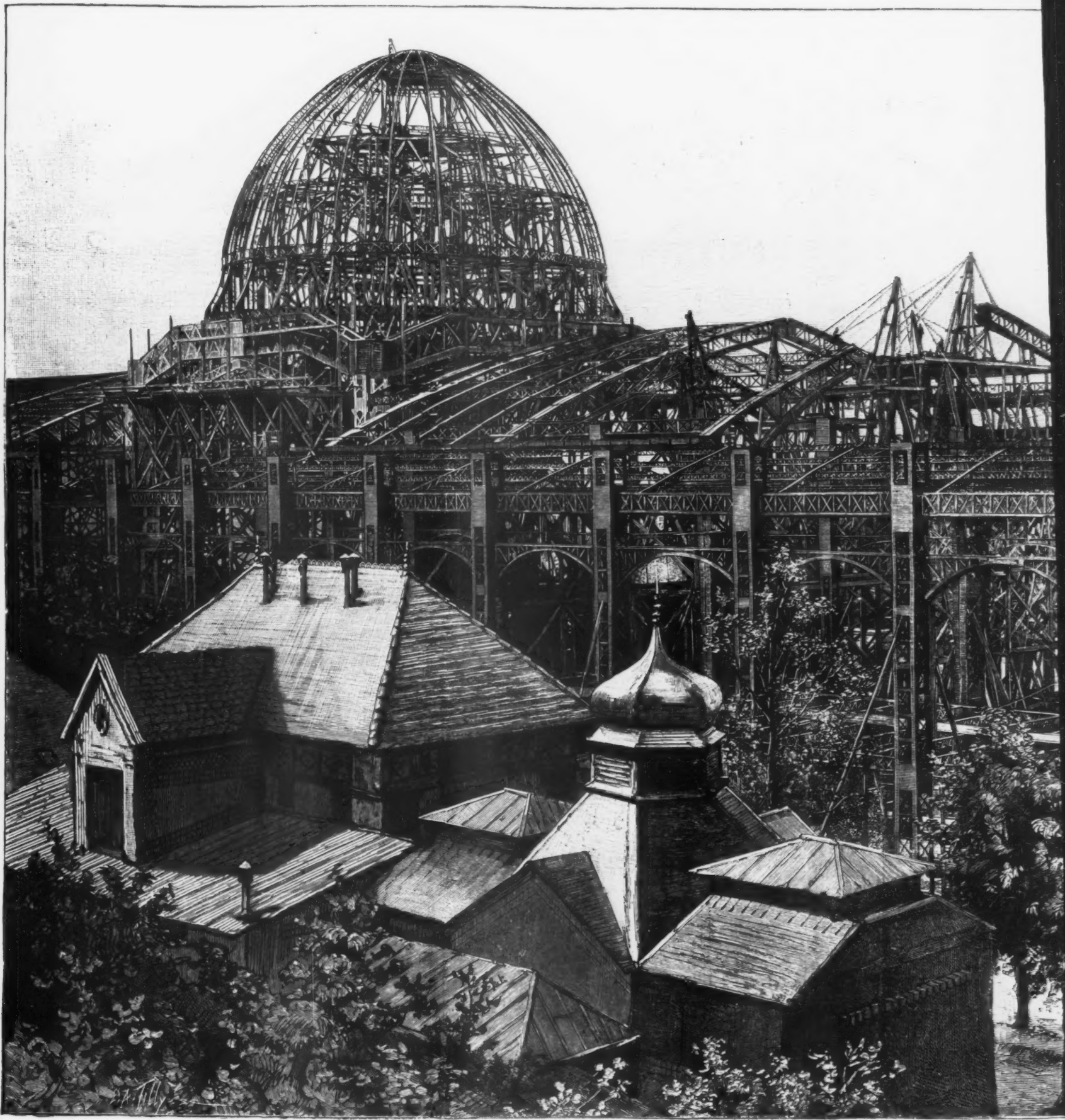


FRICTION SHAPER, BUILT BY THE PRENTISS TOOL AND SUPPLY CO. NEW YORK.

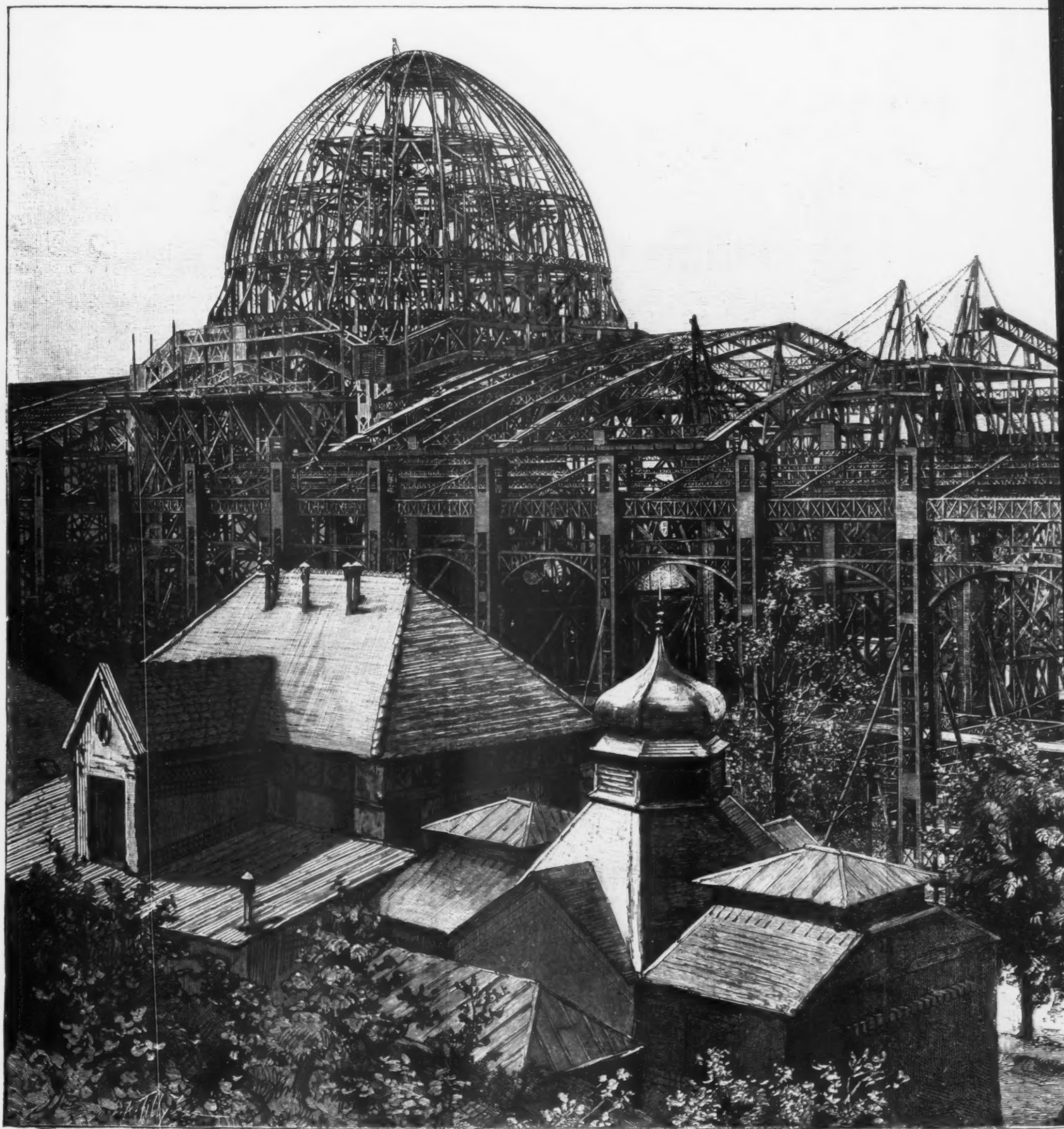
cause the grip to tighten in proportion to the resistance of the work. This enables the machine to take an exceptionally heavy cut—in fact, all the driving belt can pull without danger of slipping. The friction consumes no power except when feeding.

In the sectional side elevation we show the construction of the grip. When the hand-lever *a* is moved forward or back, either by hand or by the tappets *b* on the ram *N*, it will, through the connecting-rod *c*, rock the yoke *d* and shift a sleeve which is fitted loosely on the shaft. This sleeve holds a ring provided with two opposite notches engaging spirally-shaped fingers, which are attached to the two arms *f f'*. The ends of these arms are fastened to the ends of a steel band, which forms nearly a complete circle, and is lined on both sides with leather. When the hand-lever *a* moves, this band is either expanded or

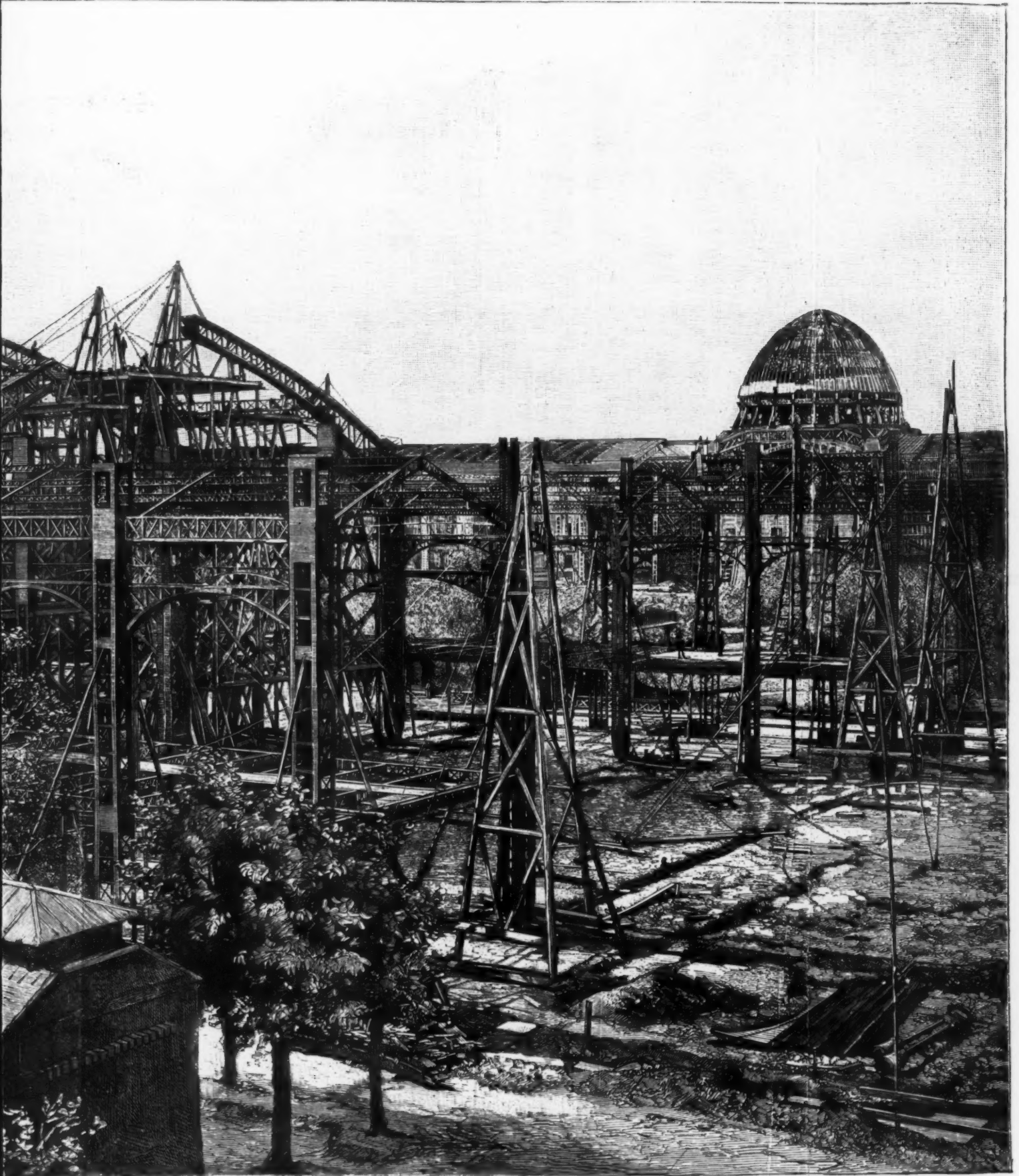
lugs on each end. An arm fastened to the shaft engages with and is driven by one or the other of these lugs until arrested by one of the stationary stops *k k*, thereby producing an intermittent rocking motion to drive the feed mechanism. When striking the stops the spring ring is relieved and the gear is freed to move without friction. The hub of this gear forms a second pinion, which drives the ram by means of the table gear *m*. One end of the shaft of this gear extends beyond its bearings, and is provided with two disks and adjusting nut, and forms the fulcrum of the hand-lever, on which the disks produce just enough friction to keep it and all parts connected with it in the required position to the end of the stroke of the ram, when, by one of the tappets, the position of the lever is reversed, thereby reversing the motion. This shaper is built by George Juengst & Sons, of Croton Falls,



THE UNIVERSAL EXPOSITION, PARIS, 1889. PROGRESS OF THE BUILDINGS AT A RECENT



THE UNIVERSAL EXPOSITION, PARIS, 1889. PROGRESS OF THE BUILDINGS AT A RECENT



OF THE BUILDINGS AT A RECENT DATE. ENGRAVED FROM A PHOTOGRAPH.

N. Y., of whom the entire output is taken by the Prentiss Tool and Supply Company, of 42 Dey street, New York.

Our New Armor-Clads.

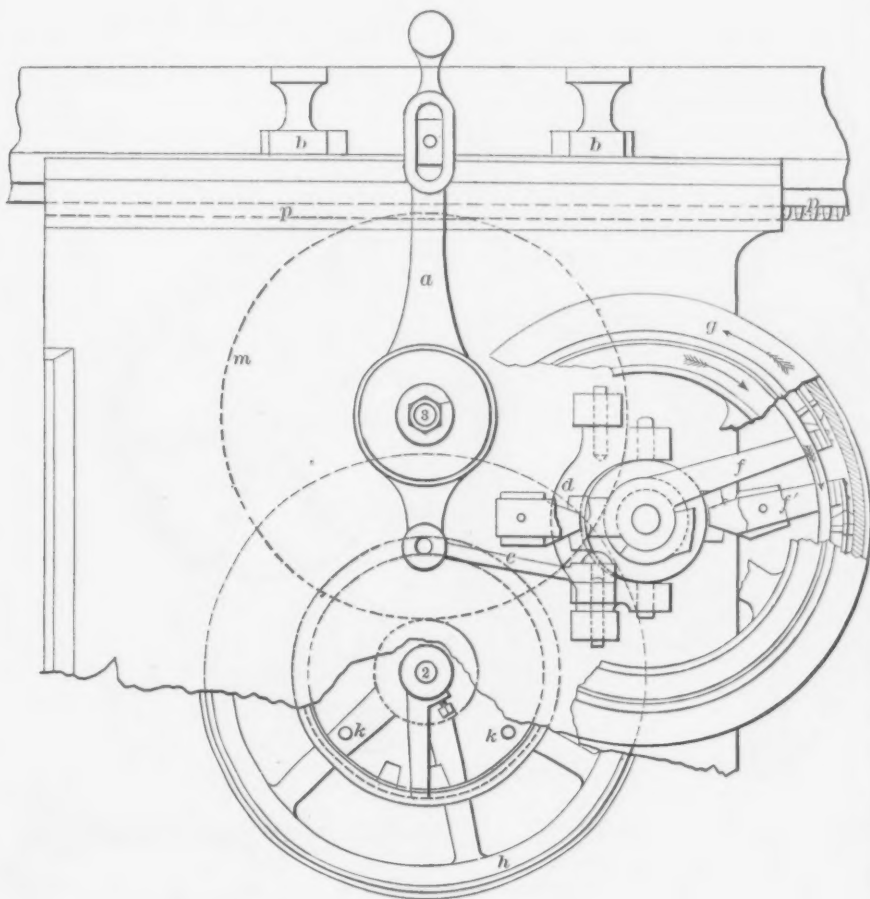
The interest felt in the unarmored cruisers and torpedo craft, now one after another approaching completion, has naturally diverted attention from the more slowly progressing armor-clads. Of these there are no fewer than ten authorized or already under construction, without taking account of the 13 single-turret monitors in ordinary, which could perform some service, if needed, in harbor defense.

The five double-turret iron monitors, the first of which is nearly ready, have side

fensive efficiency, and their light draft will give them an advantage in maneuver in many harbors over deep-draft hostile armorclads.

Indeed, it may be said that the monitor type modernized gives the basis for a nearly perfect harbor-defense vessel. As there is no necessity for those great space allowances for coal and provisions which the sea-going armorclad must have, everything can be made to turn on armor and armament, supplies and fuel being furnished from the shore up to the time of conflict. In the sixth coast-defense armorclad, authority for which was given two years ago, a sum of \$2,000,000 being allowed for its construction, we find the best features of the monitor type introduced. The bids for it will be opened in a few weeks, as the specifications have just been

ized but not yet fully planned. The fourth is the one designed by Congressman Thomas, to which both the Senate and the House have agreed, though with some differences in detail, now the subject of conference. The Maine will carry four 10-inch and six 6-inch guns of the type already spoken of. The difficulty in securing proper steel materials for this vessel has been great, so new to this country is the industry of building large modern ironclads wholly of domestic materials. Even the use of the materials, when properly furnished, is not always skillful, and losses are thereby occasioned. The Texas is much less advanced than the Maine, because incongruities were discovered which have required the modification of her original plans in order to carry out the purposes of the department in her construction. She will carry two 12-inch and six 6-inch guns. The third armored vessel, provided for last year, will have about 7500 tons displacement, and will carry four 12-inch guns. Her engines will give her probably about 17 knots speed, and with 16 inches of solid steel armor on a water-line belt extending clear fore and aft, she will be one of the most valuable fighting ships to be found anywhere. The tenth of our new armor-clad vessels will be the sea-going partly submerged monitor. Its speed and other details cannot be positively described until an agreement is reached on this subject by Congress, but its plans in general have been mainly approved by naval experts.



SECTIONAL SIDE ELEVATION OF PRENTISS FRICTION SHAPER.

armor not as thick as it should be, except in the case of the Puritan, but their turrets are covered with 11½ inches of steel. They all carry four 10-inch steel breech-loading rifles, firing projectiles that weigh 500 pounds with a powder charge of 250 pounds. This gun will pierce 23 inches of wrought iron at the muzzle and 17½ at the distance of a mile, and at this latter distance the 30 inches of freeboard exposed by the Puritan makes a hard mark to hit, while in the other four the exposed side is only 25 inches. This is the real source of the reliance which may be placed even on the four which have but 7 inches of side armor. As to the Puritan, which has 12 inches of side armor, as a harbor defense vessel she need not fear to attack any opponent. Their guns, which are of the best modern type, can be brought into play at a distance which gives the enemy a most difficult target, with shots likely to glance from the low cylindrical turrets. Double bottoms, water-tight compartments and protective decks aid their de-

completed at the Navy Department. She is to have a length of 250 feet, a breadth of 59, and a depth of a little over 11½, with a displacement of 4000 tons. Her steel armor will be 16 inches thick at the maximum, and her engines are to develop 5400 indicated horse-power. She is to carry a 16-inch breech-loading rifle weighing, exclusive of the carriage, at least 107 tons, and throwing a 2000-pound projectile with a powder charge of 1000 pounds. This will be capable of penetrating at the muzzle more than 36 inches of wrought iron. She will also carry a 12-inch, high-power rifle, having a projectile of 1350 pounds, propelled by a powder charge of 675 pounds, and having a muzzle penetration in wrought iron of 32 inches. A dynamite tube and a powerful secondary battery will complete her armament.

Besides these six harbor-defense vessels we shall have four seagoing armor clads. Two of these, the Maine and the Texas, are building at Brooklyn and Norfolk. A third, larger than either, has been author-

The Kearsarge Copper Company.

The operations of the Kearsarge Copper Company, one of the new Lake Superior mines, in 1888 show this general result:

Mineral product	946,876 pounds,
yielding at 86.83 per cent.	829,185
pounds refined copper, sold for	\$137,609.71
Interest receipts	1,458.65
Assets January 1, 1888	56,479.56

Total.....\$195,547.92

Expenditure:

Operating	\$72,554.60
Smelting, freight, &c.	10,579.43

Total.....\$83,134.03

In mine plant	18,173.79
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\$101,307.82

Assets January 1, 1889.....\$94,240.10

Assets.

Cash at Boston	\$7,308.75
Cash at mine	562.68
Supplies at mine	1,630.73
Bills receivable	44,449.75
250 shares	25,000.00
Copper on hand, 560,885 pounds	43,046.03

Total.....\$122,082.94

Liabilities.

Drafts outstanding	\$11,536.68
Accounts payable	16,312.16

Total.....\$27,842.84

Balance of assets January 1, 1889.....\$94,240.10

The mineral yielded the large average of 86.83 per cent. of ingot copper, which was sold at an average price of 16.6 cents per pound. President Van Brunt says the mine has been producing only since last August. The stopes in the two upper levels have held out remarkably well for copper, and continue to do so, while the lower levels have been somewhat disappointing. Strong hopes, however, are entertained of better results later on. The company have the use of one of the Osceola stamps on very favorable terms for what rock they have to treat, so that for the present, and until the mine is further developed, it does not seem wise to erect stamp mills of their own.

The extensive cordage works at Elizabethtown, N. J., are to be enlarged by an additional structure 450 feet long and 60 wide, permitting the employment of 1200 operatives.

Automatic Four-Slide Wire Forming Machine.

This machine is designed to form wire into a great variety of shapes, such as furniture drop handles, buckle frames, round and oval rings, screw-eye blanks, handles for dripping-pans, belt hooks—in fact, almost any article that can be bent around a form can be made on this machine. The mode of operation is as follows: The wire is drawn through a series of rolls by the feed, which straightens and carries it through a cut-off die and in front of a form which is the shape of the article to be formed. It is then cut off by the action of the four slides and is bent around said form. Then by another motion the article is thrown off the form and drops into a box or other suitable receptacle under the machine. The four slides are operated from the four sides of the machine by means of positive motion cams

and strong, it is easy to adjust and operate, and when once started it will run without close attention until the end of wire is reached. The manufacturers claim it to be the simplest, the cheapest and most unique and durable machine in the market. This machine is built in several sizes. For further information address the E. J. Manville Machine Company, Waterbury, Conn.

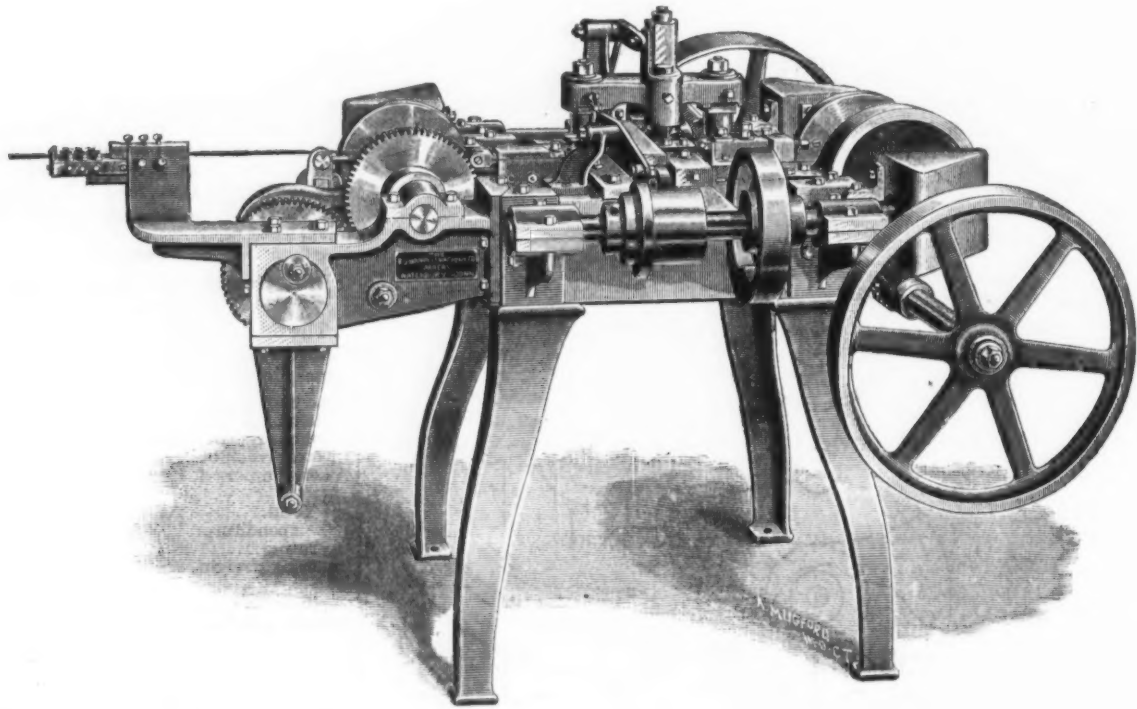
The Chinese Wall.

The Chinese Wall is no myth, contrary to recent assertions. Built 1700 years before America was discovered, 1600 miles of it still remain erect. A correspondent who recently rode two days from Peking and mounted its ramparts said:

I could see it climbing the mountains and going down the valleys as far as my eyes could reach. It did not diminish in strength nor size at the various points I visited, and its masonry would have been

mines, of which the builders and architects constructed the mighty Cathedral of Milan.

A gigantic safe-deposit vault weighing 500 tons, and constructed of miter blocks, none of which are less than a foot thick, has been built in Pittsburgh by the National Safe Deposit in Vault Company, and finished at the foundry of the Griffin Car Wheel Company, in Cleveland, Ohio. It is 31 feet long and 17 feet wide, with two doors, each weighing 5½ tons, without lock, knob or dial, which are moved transversely on rollers across the recesses by a system of gear work that is built in the foundation blocks and secured by a locking device that is set in the floor in front of the vault. The doors themselves are secured by a series of steel bolts, operated by a double automatic bolt-throwing device, which is in turn regulated by a chronometer, triple-movement



AUTOMATIC FOUR-SLIDE WIRE FORMING MACHINE, BUILT BY E. J. MANVILLE MACHINE COMPANY, WATERBURY, CONN.

which are keyed to the shafts. These cams are made of cast iron with hardened cast-steel working parts. These hardened parts work against a hardened and ground roll which revolves on a pin, thus reducing the friction to a minimum. The form is fastened rigidly in a casting, in a manner that renders it perfectly solid, but the casting or form holder is made adjustable on the bed of machine, so as to allow for any inaccuracy in the making of the form and to compensate for different shapes which it may be necessary to make. The holding of the form solidly has been proven, by practical experience, to be a great improvement over a movable or traveling form. The machine, as illustrated, has a positive-grip feed, which for small wire is considered preferable, but a roll-feed, however, can be applied, as the nature of the work governs the case. If it is desired to straighten and cut the wires to be formed by some other device, a hopper feed can be applied that will carry the wires one by one to the tools, as practically as if fed by a positive feed. The cut shows the machine back geared, which feature can readily be dispensed with providing the work to be performed does not require it. While it is sufficiently heavy

good work for the American builders of to-day. It is about 25 feet high, and at the top it is so wide that two carriages could drive abreast along it and the hubs of one would not touch those of the other. Its exterior walls are of blue brick of such a size that they look like massive stones, and these are filled in with earth and paved with brick at the top. The grass and the moss have now grown over the top of this great wall. No archers now guard it, and it stands amid the snowy mountains a monument of the almond-eyed men who thus, 2000 years ago, sought to protect their homes and those of their descendants for all time to come. No one can stand upon the ramparts of this structure and not be impressed with the greatness of the Chinese nation. It is a greater monument than the pyramids of Egypt, built by selfish kings for royal tombs, and its purpose was nobler. It is a monument also of the great truth that while man dies his work remains, and that the lives bottled up here 20 centuries ago exist to-day, as does the hand that carved the Venus di Medici, the pen that wrote Shakespeare and the *Aeneid*, and, in a humbler though no less effective way, the muscle that dug out the marble from the

time lock. Altogether there are 400 blocks, composed of a special quality of cold-blast charcoal and Salisbury iron, forming a car-wheel mixture. There is a hard chill of 2 inches on the outer surface of each metal block. This chill is so hard that no steel tool can penetrate it. The side and end walls are composed of separate blocks, each block having a tongue and a corresponding groove upon their adjacent horizontal faces, and a dovetail joint upon the adjacent vertical faces. All the dovetail joints are drawn up with steel keys. Two steel tie rods, 2½ inches in diameter are passed vertically through each course of wall blocks, the lower ends of such rods engaging with wrought-iron square nuts set in the outside course of floor blocks. The roof of the vault is constructed of a series of blocks of the same material and thickness as the wall blocks.

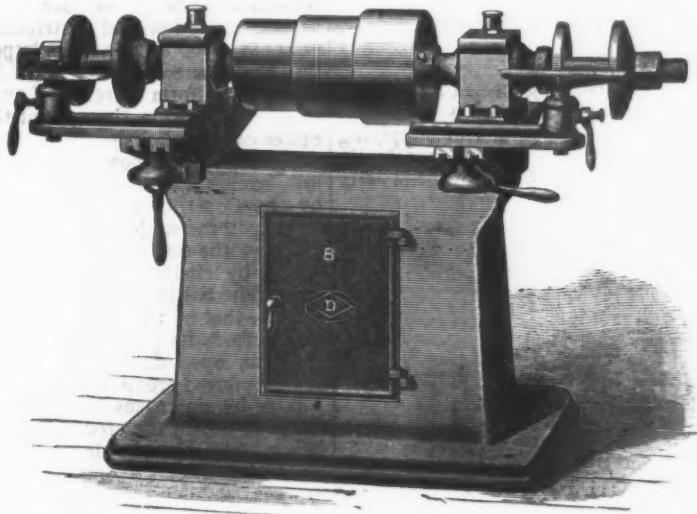
In Sweden hollow steel ingots are being made by casting steel in molds hung on trunnions, allowing the sides to chill to the required thickness and pouring out the steel still liquid in the center. These hollow ingots go to England, where they are drawn out cold to tubing.

Large Grinding Machine.

We illustrate on this page a new grinding machine just produced by the Diamond Machine Company, Providence, R. I., who have a branch at 51 South Canal street, Chicago. It is especially adapted for use in large foundries and machine shops, and is a very heavy and solid machine, which insures steadiness. The aim has been to make the construction through-

or profit upon steel rails until some mode of combination has been adopted by the trade. The hope of forming such a combination has by no means been given up. Negotiations are still proceeding with a view to some reasonable arrangement being come to among the 16 firms who make steel rails, and the directors have recently taken an important step in sending round to the directors and general managers of the various companies and

diagonally with pieces of rubber instead of bristles, as at present used in street sweeping. Under the driver's feet is a water-pipe, from which copious jets of water are thrown, washing away the sand, which is swept into the gutter and washed into the sewers. The machine cleaned two blocks in Fifth avenue, leaving the stone pavement as clean as it would appear on a summer's day. The time occupied was six minutes on each block.



LARGE GRINDING MACHINE, BUILT BY THE DIAMOND MACHINE CO., PROVIDENCE, R. I.

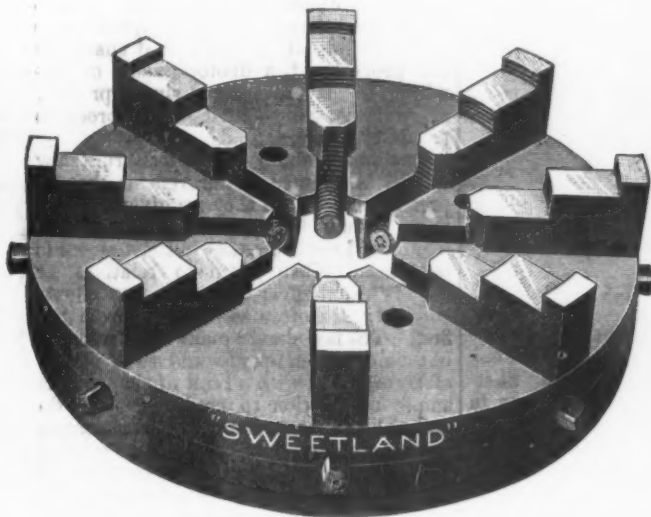
out of equal finish to the best make of engine lathes. It has steel spindle, engine lathe boxes and arms for rests, both front and back. It will run two emery-wheels up to 34 inches in diameter, of any thickness up to 5 inches. It has bear-

members of the firms interested a carefully-considered circular on this subject, in the hope of advancing the object in view and of obtaining for all parties a fair return, but no more than a fair return, for the capital invested in the business. Mean-

The Sweetland Eight-Jaw Chuck.

This chuck is intended principally for use in chucking articles which require an extra strong grip to hold them. An important advantage is also gained from the fact that, as the pressure is distributed over eight points, all danger of the article held springing out of shape is eliminated. The Sweetland is a combination chuck, both independent and universal. Its construction is so plainly shown by the accompanying engravings as to render a description in detail unnecessary. It is made by the Hoggson & Pettis Mfg. Company, of New Haven, Conn.

The Gatling Gun.—The Gatling Gun Company, Limited, of England, which was some time ago formed for acquiring from the Gatling Gun Company of America the patent and manufacturing rights for Europe and the whole Eastern hemisphere, has, says an English contemporary, "purchased the Birmingham works of the defunct National Arms and Ammunition Company. The works and site, which cost the late company about £120,000, were purchased for the present holders for £30,000, and about £15,000 are being spent in adapting them for the manufacture of Gatling guns and ammunition. The machine shops have been re-floored and repainted, and a large number of the machines which are obsolete are being converted on the pattern of those in use in



EIGHT-JAW CHUCK, MADE BY THE HOGGSON & PETTIS MFG. COMPANY, NEW HAVEN, CONN.

ings 9 inches long, the size of spindle in the bearing being 2½ inches, with 2-inch spindle between flanges. The machine stands 32 inches high from floor to center of spindle, and its weight, complete with countershaft, is 1050 pounds.

The International Steel Rail Syndicate is referred to in the following terms by the directors of the Rhymney Iron Company, one of the large English works: "Judging from past experience, it would seem to be impossible to obtain under existing competition a reasonable price for

while the directors are devoting their attention to decreasing the quantity of steel rails manufactured and increasing their output of tin plate, bars, and other special branches, which may from time to time afford a better result, pending the possibility of realizing a profit on steel-rail manufacture."

A new street-sweeping machine is on trial in New York City. The machine is a large circular water tank, running on three wheels, underneath which are placed large rollers or scrapers set

the American factory. It is stated that when the factory is in full work it will find employment for nearly 1000 men and women, and the establishment, when fully organized, will be capable of turning out about 1000 machine guns a year and 3,000,000 cartridges per week. Hitherto the European manufacture of the Gatling gun has been carried on for the American company at the Elswick works. The new works at Birmingham are under the direction of Mr. J. Accles, who is the inventor of several improvements in the gun."

"Blackband" Iron.

Apropos of the fact, recently alluded to in *The Iron Age*, that the Chicago pig iron makers are striving more than ever to control their home market, comes a very "natty" publication from the office of Charles Himrod & Co., of that city, entitled, "A Few Remarks About Blackband Irons." It consists of cardboard leaves tied together with scarlet ribbon, but despite its innocent appearance it throws down the gauntlet to the Ohio makers of soft irons in a very positive, not to say aggressive, manner. First, the statement is made that the soft Ohio irons, known as blackband irons, have been of such excellent quality as to replace almost everywhere the imported irons formerly used for softeners. Next, it is declared that the increasing cost of Ohio blackband ores and the receding price of iron have compelled the Ohio furnacemen to replace their native ores with Lake Superior ores, but they still call their irons "blackband" irons, and they are in fact just as good as they were when native ores were used. This is proved by the experience of one of the most successful foundry iron companies in Ohio, whose product has always sold at the top of the market as a "blackband" iron, while it did not contain enough blackband ore to affect its character. The logical sequence then follows—namely, "there is no good reason why the same ores will not make as good iron in Chicago as they will in the Mahoning or Shenango valleys." The statements following are made to prove that not only are the identical ores available for the use of Chicago iron makers, but that analyses of pig iron made from them show as good results as the Ohio irons or imported Scotch. The following comparative analyses are published:

	Sil.	Man.	Carbon.		Phos.	Sul.
			Graph.	Com.		
Coltness.....	3.39	1.77	3.27	0.60	0.44	0.04
Glenarnock.....	2.83	2.13	2.69	0.85	0.54	0.04
Ohio softener.....	3.12	1.41	3.34	0.08	0.48	0.02
* Ohio softener.....	3.00	2.50	.....	.....	0.75	.....
Calumet.....	1.98	0.67	3.28	0.42	0.23	0.03
Chicago Scotch.....	3.83	0.60	3.215	0.288	0.316	0.03

* This is a very celebrated iron, the makers of which do not claim to use any blackband ores.

Messrs. Himrod & Co. point out the importance to foundrymen of the amount of silicon present in pig iron, and state that their Calumet iron is analyzed for silicon and carefully graded according to the proportion it contains, so that purchasers can depend upon securing a uniform iron. The document is well calculated to secure a lodgment in the minds of Northwestern foundrymen of a favorable impression concerning the irons now being made in their immediate vicinity.

Lloyd's Rules for Steel Vessels.

The committee and officials at Lloyd's Registry have again found it advisable to modify their rules in the light of further investigations, and accordingly they have this year issued new rules for steel vessels, and amended rules for iron vessels, which, on the whole, are considered to be more favorable for iron than they have been. Of course anything that lessens the difference between the thicknesses of iron and steel plates, while the prices of the two are so far apart, must tell in favor of iron. Thus iron manufacturers have better hopes regarding their prospects. The new rules, it may be mentioned, fill a quarto volume of 200 pages, there being included a large number of tables for iron and steel and full particulars of dimensions. They assign the limits of safe construction and

details of the strength and reliability of the different metals, their behavior under stress and strain, &c. It may be stated that these new rules provide that for iron of a thickness of a certain number of sixteenths of an inch—the difference being regulated by the size, &c., of the vessel to be built—a steel plate of so many twentieths of an inch may be considered an equivalent—*e. g.*, a first garboard steel strake of $\frac{5}{16}$ inch is equivalent to an iron one of $\frac{1}{8}$ inch.

Buffalo Glass Oil-Cup.

With the increasing use of high-speed machinery, the problem of a thoroughly efficient and reliable means of supplying oil to the bearings becomes constantly more important and difficult. Not only



Four-Hole Eight-Drop Buffalo Glass Oil Cup.

is this demanded, but there must be economy in the use of oil. The oil-cup manufactured by Felthousen & Sherwood, of Buffalo, N. Y., and shown in the accompanying engraving, possesses new features of interest in connection with this question. It is of glass, with metallic base and cap. In the base are openings covered by glass lenses, through which the feed can be seen. The feed can be adjusted to suit requirements and fastened with a lock nut. It can then be started or stopped instantly by means of the lever, shown in the cut, without interfering in any way with the feed adjustment. The lenses on the sight drop can be easily taken out, cleaned and replaced, or new ones substituted if necessary. The cup is filled from the top, and has no loose parts to come off. If at any time it is desirable to flush the cup, it can be done by simply pulling up on the adjusting stem, when a stream of oil can be sent through it, this being accomplished without any change in the regular feed adjustment. These cups are made in four styles—two holes open, two holes protected by lenses, four holes open and four holes protected by lenses

A National Bankrupt Law.

The Committee on Bankrupt Law of the National Stove Association, consisting of W. P. Kellogg, E. W. Peck, A. J. Redway, E. G. Callahan, W. P. Warren, J. L. Smyser and W. H. Whitehead, made the following report, at the Chicago meeting:

Your committee appointed to prepare a resolution expressing the sense of this convention upon the question of a general bankrupt law beg leave to report: That in their judgment a uniform plan for the collection of debts, or more particularly for the collection and distribution of the assets of insolvents, is in its importance to the business community second only to that of a uniform currency. Laws uniform in their operation throughout the United States can only be passed by Congress, and Congress has no power to pass any such law, except under the power conferred by the Constitution to establish uniform laws upon the subject of bankruptcy. We all know the ease and frequency of preferences—by chattel mortgage, bill of sale or confidential indebtedness to relatives or others—that by rendering fraud easy, and escape from its punishment easier, put a premium upon dishonesty, the unsecured or unpreferred creditor having no redress.

It is by no means rare for a wholesale house to bolster the credit of a weak merchant, until others are induced to sell him, and then enforce a demand for payment or security by threat of proceedings for collection. We believe that an equitable bankrupt law is one by which it is impossible for a debtor to be discharged from the legal obligation of his debts without a full disclosure of his condition and a full surrender of his property. If a law provided that any confidential preference or any deception or concealment of property should prevent a discharge in bankruptcy, it would be an incentive to honesty and prove a safeguard both to debtor and creditor. Former bankrupt laws have been passed after periods of depression or of panic, when relief for large numbers seemed to justify a legal discharge from their obligations. What we now need is a measure of permanency, adapted to the current needs of business, that shall take the property of a debtor unable or unwilling to pay, and by a single process, at minimum cost, distribute the proceeds to his creditors.

One chief abuse that a bankrupt law should be framed to prevent is that of preferences. When they are given to creditors, it may be by connivance between debtor and creditor; that in itself amounts to fraud. When given to relatives or friends their effect is usually fraudulent, and they are often so intended from the first. The law should make them impossible, unless given openly and as a matter of record, and with a limit of time that is ample notification to creditors. We do not wish to discuss the question at length in this report, but, believing a general bankrupt law to be a measure that would have a salutary effect upon business, we hope for a free discussion of the question in convention, and would recommend the adoption of the following resolution:

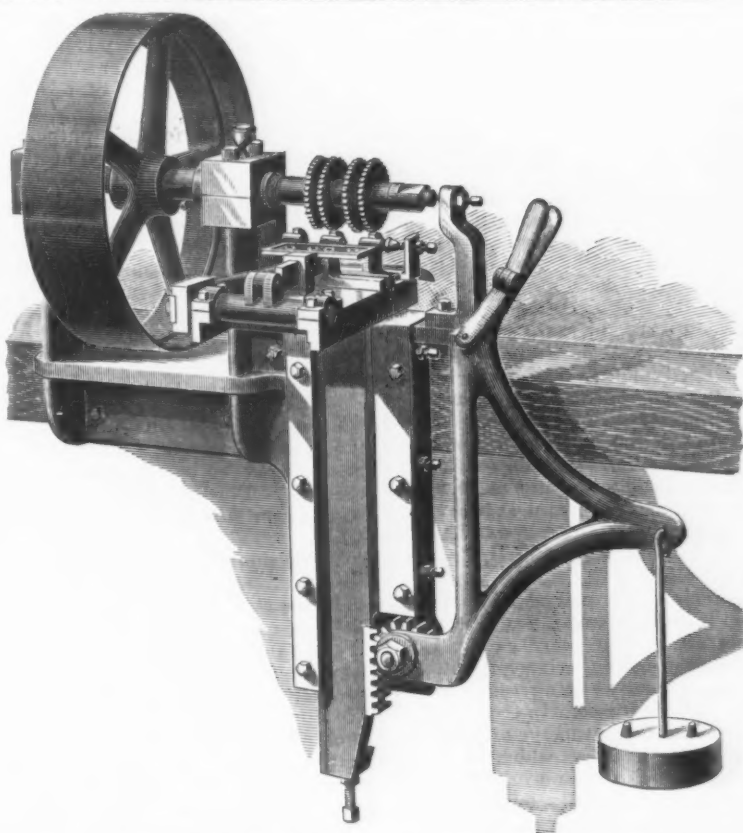
Resolved, That the early enactment of a general bankrupt law, to compel an unreserved showing and surrender of assets, to prevent unjust preferences, and to facilitate just settlement of the estates of insolvent debtors, as a permanent feature of our collection laws, is a much needed measure, and one that would benefit business alike in all sections.

Your committee further recommend that our secretary be instructed to officially communicate this action of our association to boards of trade and business men's associations in other cities and the press.

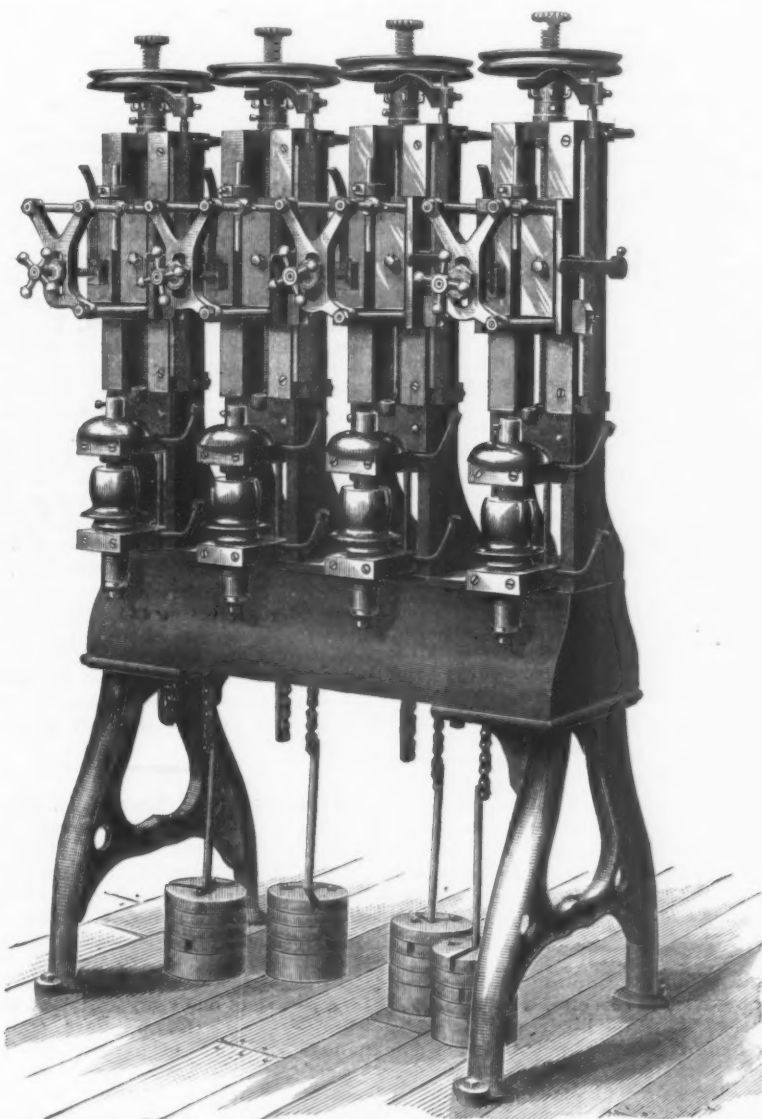
We also recommend a memorial to Congress from our association urging the passage of such a law, and that as individuals we urge it upon the attention of our respective representatives in Congress.

The Adt Butt Machinery.

The butt milling machine is for milling all kinds of cast butts, and is designed to be attached to an ordinary bench; the gang of mills is mounted on a horizontal steel spindle, and the work is fed up to it on a sliding table provided with a self-closing adjustable chuck; the table is raised and lowered by a rack and gear operated by a weighted lever, and the extent of its upward motion is regulated by a set-screw at the bottom of the slide. In operating the machine the butt is placed in position with one hand, while the other releases the spring catch and starts the lever; at the same time the chuck closes automatically and holds the butt firmly during the milling operation; when this is completed and the lever raised, the chuck opens and the butt is released. One operator can run two machines, and by matching the halves of the butts during the milling process detect any slight variation in the parts. It is claimed that this is the only method by which accurate work can be assured, as if one machine is used for both parts, especially on large lots, the mills may become dull before the first halves are finished, which will cause a variation in size, and by the time the second halves are finished there will be so much difference between the two parts that some of them will not match, and it will then be necessary to mill them over again or fit them by hand. In using a separate machine for each part, not only is much time saved in changing mills, but the butts are matched ready to commence



BUTT MILLING MACHINE, BUILT BY JOHN ADT & SON,
NEW HAVEN, CONN.



AUTOMATIC BUTT DRILLING MACHINE, BUILT BY JOHN ADT & SON,
NEW HAVEN, CONN.

drilling at once, and thus the two operations can be carried on together without the delay of waiting for the second half to be finished. A full outfit of butt milling and drilling machines should consist proportionately of one of the former to two of the latter.

Formerly the joints of butts were drilled on ordinary hand-lathes, and the only improvement made was in drilling by means of weights or a positive feed; but this method demanded the constant attention of the operator in order to prevent the drills heating or breaking. About 20 years ago the inventor of the machine here illustrated became convinced that both halves of butts could be drilled and matched together at one operation, and thereby avoid the constant watching required by the above method. To accomplish this he devised the plan of feeding by a screw and using a split nut arranged to open instantly whenever the drill became dull or struck a hard spot. This improvement forms one of the most important features of the automatic butt-drilling machine, and 20 years' use has demonstrated its advantages over all other methods. This machine is arranged with drills running in stationary bearings provided with convenient tubes for oiling, and protected from chips and dirt by bell-shaped guards attached to the spindles. The sliding carriage upon which the work is placed is fed toward the drills, and is started by closing a split nut on the feeding screw with a slight motion of a lever. When the proper depth is reached the lever comes in contact with a gauge on the side of the machine, which instantly opens the nut, and the carriage slides back by means of weights to its former position. As one boy can run ten machines, the most economical arrangement is to have them mounted in gangs of five and placed end to end. The cut shows four machines, which is the smallest number that can be recommended in one gang. The amount of work which can be done on these machines is equivalent to 1 inch per minute for each spindle on a medium-sized butt.

The above machines are manufactured by John Adt & Son, New Haven, Conn.

Smoke Prevention.

In an address before the St. Louis Commercial Club, Robert Moore, C. E., speaking of smoke prevention in cities, referred to a class of devices in which small openings are made into the furnace above the coal precisely as in the Argand furnace of Wye Williams. But instead of depending upon natural draft to force the air through them, there is in each a small jet of steam, which projects the air into the fire with a high velocity and causes the mixture of hot air and gas to be made more quickly and thoroughly than is practicable by natural draft alone. The result of this, where the number and arrangement of jets is properly made, is a very perfect combustion of gas with an almost entire absence of smoke. Two devices of this kind are now in actual use in St. Louis. One of them may be seen at the power house of the Olive Street Cable Railway, and the other at the store of D. Crawford & Co.

In principle this method of smoke prevention is entirely sound, and the results actually attained are very good. It has also the great merit of being comparatively inexpensive, and of being easily applied to an existing furnace. In these respects it has greatly the advantage over the class of mechanical stokers, which are much more costly, and can, as a rule, be applied to an existing plant only by entire reconstruction to the furnace. It has also the further and very important advantage of admitting a higher rate of combustion than so far seems practicable by the other method, thus giving to the same set of boilers a greater working value.

This reduction of capacity has up to this time been the greatest obstacle of all to the introduction of smoke preventing furnaces. A very careful and very valuable series of tests of the actual working of such furnaces has been made by Professors White, Jones and Potter, of the Washington University, who have thereby done more than any other persons whom I know to convert the ordinary crude guesses upon this subject into exact and scientific knowledge. Their experiments, which have included the Backus, the Hall, the Jarvis, the Williams and the Murphy furnaces, have shown that by their use in such a manner as to be smokeless, the capacity of the steam plant as a whole is from a value of 100 per cent. given by the common smoke producing furnace brought down to 60, a reduction of 40 per cent. In other words, if with the common furnace burning coal without any regard to the amount of smoke produced it requires three boilers to make a given amount of steam, five boilers will be required to make the same amount of steam if a smokeless furnace be used. As steam boiler practice at St. Louis has always been largely governed by that of the river steamboats, on which it is of vital importance to make the needed steam with the smallest boiler possible, and as moreover many steam users are unable as well as unwilling to incur the increased outlay necessary for a smokeless plant, the introduction of these has until recently made little or no progress. Many have put in smoke burning devices, but finding they could not make the steam which their business demanded have taken them out and reverted to the old methods, which do indeed produce smoke, but do at the same time give them the power which they require. And unless some method is found by which this difficulty can be overcome, the prevention of smoke will be seriously embarrassed, as it will in practice be found to be a matter of much difficulty to compel steam users to make the larger investment of money which a smokeless plant will require.

In order to ascertain by an actual working test the performance in this respect of

the device in use at the Olive street power house, which was not included in the series of tests already mentioned, Mr. P. C. Maffit, president of the Missouri Railroad Company, very kindly consented to put the plant for this purpose at the disposal of Mr. C. E. Jones, of the Manual Training School, who volunteered to give the matter the necessary time. Such a test was accordingly made on October 13, extending from 7.30 in the morning until 11 o'clock at night. During this time the boilers were run first at the ordinary rate necessary to do their regular work, burning 23 pounds of coal per square foot of grate surface per hour; second at a rate of 32½ pounds; third at a rate of 27 pounds, the smoke-preventing apparatus being all this time in full operation and the amount of smoke produced being noted by an observer stationed on the roof. Finally the plant was run for three hours with the smoke burner shut off.

While these experiments were not sufficient to determine all the facts in regard to the working of the apparatus, notably the amount of steam required to operate it and its effect, if any, on the boiler, they were enough to show that simply as a preventer of smoke it has much merit. Up to a rate of 27 pounds of coal per square foot of grate surface it was practically smokeless. Beyond this rate of firing there was a good deal of smoke though very much less than with an ordinary furnace. Though in practice it is sometimes desirable, or even necessary, to push a furnace to a rate of 35 or even 40 pounds of coal per square foot of grate surface per hour, it is not common and ought perhaps never to be necessary. So that a furnace which will, as in this case, burn 27 pounds substantially without smoke may be considered as fairly successful.

I am of the belief, however, that the highest success attainable will be reached by a combination of these two general methods—viz., by some form of mechanical stoker which will feed larger coal than those now in use, coupled with means for the admission of air, by a forced draft if necessary, in proper quantity above the coal or at the bridge wall for the combustion of the gases. I do not know of any existing apparatus which quite fills this ideal, but I can see in it nothing impracticable, nothing which we may not reasonably hope to attain. On the whole we are, I think, justified in the belief that with proper efforts the smoke nuisance can even now be greatly mitigated, and in course of time substantially abated. To do this will, no doubt, cost something in money and something in convenience to the coal user. The same thing may be said, however, of nearly every other public nuisance. As a rule their abatement is attended with both trouble and expense and hardly any of the comforts of civilization are given to us for nothing. But even if the sacrifice required in this case were much greater than it is ever likely to be, it is no more than we have a right to ask, or even to require, the citizen to make to the comfort and well being of the community at large. And to help to form a public sentiment which will emphasize and enforce this demand, and without which the most stringent ordinance will be a nullity, is a worthy object both for individual and associated effort.

The Williams Printing Company, of Cherry street, in this city, who print *The Iron Age*, *The Metal Worker* and *Carpentry and Building*, have lately introduced a simple contrivance which removes thoroughly the source of much annoyance in printing. At times so much electricity is generated in printing that either the sheets cling together tenaciously or they show remarkable eccentricities in their

movements, suddenly shooting off from the delivery table for yards. At times this trouble has reached a point where work had to be stopped entirely. After experimenting unsuccessfully with a number of devices, the dissipator of L. E. Bathrick was tried. It did its work so well that it was applied to all of the eight large presses of the Williams Printing Company. Along the feed-table and under it is a long rod, from which is suspended a fringe of cloth saturated with a dissipating fluid, kept in contact with the delivery cylinder. Attached to it is a copper wire wound several times around the standard of the press. Its end is provided with bar, which is introduced between the delivery table and the sheet zinc covering of the latter. Even in damp weather a number of sparks can be observed in rapid succession when the bar is taken from its place and is made to approach the sheet zinc.

Some Tin-Plate Statistics.

The magnitude of the tin-plate industry is seldom fully realized by those outside of the trade, except when they chance to see some table of statistics. A single sheet of tin makes such a big showing for its weight that we are surprised to find the annual Welsh product running up to such large quantities. We also do not give full weight to the fact that this industry, the product of which goes all over the world, is practically centered in a single country. A similar product, sheet iron, for example, presents no remarkable statistics, for each country supplies its own demand; but when the demand of many countries is supplied from one, as is the case with tin plates, the tables of production necessarily contain large figures. During 1888 the total exports of tin andterne plates from England were 7,825,820 boxes, or 391,291 tons; of this sum 5,852,460 boxes came to the United States, while the next largest importer was Canada with 400,000 boxes. Compared with 1887 the imports to this country increased nearly 500,000 boxes, while the total exports from England increased less than 800,000 boxes. The United States imports of tin plates have shown a remarkably uniform rate of increase for the past 25 years. Beginning with about 600,000 boxes in 1862, the imports rose to 1,000,000 boxes in 1866, to 2,100,000 in 1887, to 3,100,000 in 1879, to 4,300,000 in 1882 and to 5,270,000 in 1886. On January 1, 1888, there were 87 existing works, representing 393 mills, of which 350 were in operation, with an estimated annual productive power of 9,130,000 boxes. On January 1, 1889, the existing works numbered 96, representing 444 mills, of which 403 were in operation, with a productive capacity of 10,075,000 boxes per annum. The prices last year were also favorable as compared with the three preceding years, though the advance was not very noteworthy.

Merchandise in Transit in Bond.

In respect of merchandise transported in bond between the United States and Canada, Acting-Secretary Thompson issued the following: "Hereafter all bonds on entries of merchandise for immediate transportation and exportation under the provisions of Articles 846 and 856 of the General Regulations of 1884 will be taken for a period of one year, instead of the respective periods of 60 days and four months specified in the first-mentioned article. Bonds heretofore given under said articles may be withheld from prosecution under the usual condition as to the consent and responsibility of the sureties for a period of time not exceeding one year from their respective dates.

Combination Friction Drill.

This tool is made for both taper and square shank drills, and is particularly adapted for machinists' use, where the different styles and sizes of drills are employed. The hexagonal top on the sleeve of this drill, to which the wrench is fitted, is an improvement over the hole and pin in making up the feed screw. In this drill, which is made by the F. F. Waters Mfg. Company, of 38 Oliver street, Boston, Mass., the well-known and certain friction clutch principle is employed. This construction results in doing away with almost all lost motion, as the drill can be operated with less than $\frac{1}{4}$ -inch backward thrust

fitting. A pin attached to the spring at each end holds the bit firmly in place. Fig. 3 is similar to Fig. 1, except that the end is round instead of hexagonal. The boiler drill, intended for working in contracted places, is shown in Fig. 5.

The Collins Furnace.

A correspondent of the *Bulletin* of the American Iron and Steel Association gives the following interesting information in regard to the above-named furnace:

The Collins Furnace, the new furnace of the Bellefontaine Furnace Company, at Bellefontaine, Pa., recently completed its

taken from the different banks of the company, and average from 49 to 53 per cent. of iron, 15 to 28 per cent. of silica, 0.08 to 0.16 per cent. of phosphorus, and from a trace to 0.03 or 0.04 per cent. of sulphur. They vary in appearance from a dark colored, often black hematite, with a pitch-like luster, rich in iron, to a lighter, liver-colored, compact hematite, not so rich. The ores are easily smelted in the furnace, and make an excellent quality of pig iron. They contain but few impurities, and it is this fact which made the charcoal irons of Centre County so famous in the past, and which is giving the coke iron now made from these ores a like good reputation. The ore from which the Bellefontaine iron is made is taken from the banks which were opened and worked for the old charcoal furnaces. The coke used by the furnace is brought from the Connellsville region. The limestone used is quarried within 1500 feet of the furnace. A sample from the middle bed, the principal stratum worked, gives: Carbonate of lime, 98.322 per cent.; carbonate of magnesia, 1.170 per cent.; carbonate of iron and alumina, 0.320 per cent.; insoluble silicious matter, 0.390 per cent.

It may be interesting to furnacemen, at a time when their attention is being drawn to the South and other new regions, to observe the production and success of a new furnace in what was two years ago a practically undeveloped iron section, although, at the same time, one of the oldest iron-producing sections in the country. The increased power of the modern blowing engine and other improvements in furnace and mining practice have rendered valuable ores that were considered unavailable for the older furnaces, and which were left in the banks and on the screening floors by our old furnacemen.

La Grange Charcoal Pig.

The pig iron made in the charcoal furnaces of West Tennessee had a very high reputation for strength in the palmy days of that iron-making section before the war. Of recent years not so much has been heard of this iron, partly because of the greater development of the iron interests of other sections, and partly because the use of the iron has been mainly confined to a limited territory instead of covering a wide section of the Union, as of old. Attention has been freshly drawn to this matter through the publication by Rogers, Brown & Co., of Cincinnati and Chicago, of the results shown by comparative tests of strength made between the La Grange charcoal iron of West Tennessee and several leading brands of Lake Superior charcoal iron. The tests were made by a prominent manufacturer of agricultural implements, for his own information, and without the knowledge of the makers or their agents until the results were furnished them. Excellent as the Lake Superior irons proved themselves to be, the La Grange surpassed them. A 2-foot 1-inch square bar was broken in each case, the La Grange at 1500 pounds and the average of the Lake Superior irons at about 1200 pounds. This is a remarkable showing, in which the Tennessee iron manufacturers may well take pride.

A Chattanooga telegram says there has been consummated in that city one of the largest and most important real estate transactions in the history of the Central South. The Chattanooga Land, Coal, Iron and Railway Company, owning 25,000 acres of land on the north and west sides of the river opposite the city, embracing valuable coal deposits on Walden's Ridge, large iron ore mines and timber lands, have sold controlling interests to the Boston, New York and Philadelphia syndicate, the consideration exceeding \$1,000,-

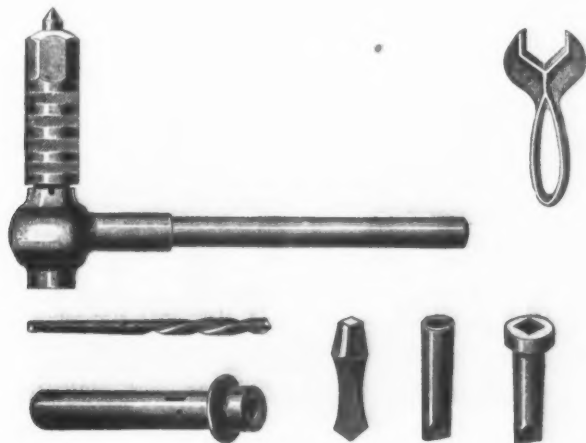


Fig. 1.

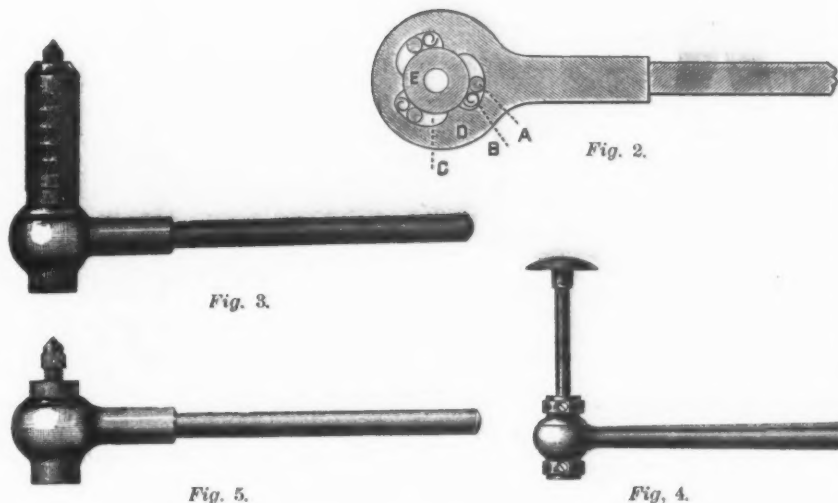


Fig. 2.

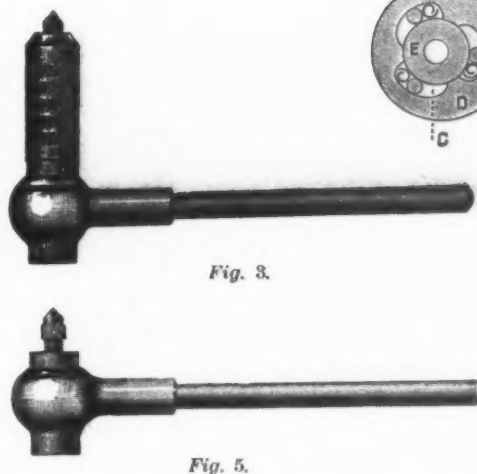


Fig. 3.

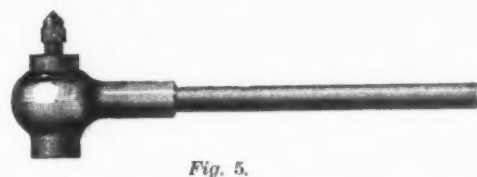


Fig. 5.

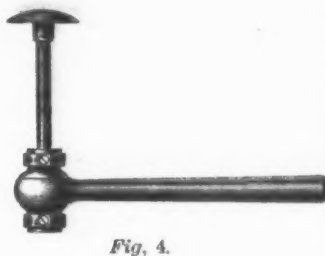


Fig. 4.

SMITH'S PATENT COMBINATION FRICTION DRILL.

of the outer end of the handle. This permits of the use of the drill in places so constructed that a drill having a considerable lost motion could not be employed. All the working parts—the body, cam, friction rolls, and feed-screw, which has a regular turned square thread—are of the best quality steel, drop-forged and tempered. The construction is shown in the lower drawing, Fig. 2. The letter E represents the body of the drill, around which the cam D revolves. The rolls A are held in place by the springs B. The opening C in the cam, into which the rolls and springs are placed, is broached out of this cam to a taper, so that whenever the handle is left the rolls will grip the body. The cam spaces are triplicated and arranged at equal distances apart, as shown. The auger friction bit stock shown in Fig. 4 is particularly adapted for the use of carpenters, machinists and gas-

first year's record, which was in every way satisfactory, 27,127 gross tons of pig iron having been made, an average of 81 gross tons for each day it was in blast. The furnace is 70 feet high, the bosh is 15 feet in diameter, and the crucible is 8 feet; the total capacity of the furnace is 72,000 cubic feet. The blast was put on on Tuesday, January 31, 1888, at 10.25 a. m., a little over nine months from the time work had been commenced on the foundation of the furnace, and the first cast was made on Wednesday, February 1, at 9 a. m. Since that time the only trouble of consequence experienced was caused by the wearing away of the in-wall at the stock-line, which was corrected by relaying the wall at that point with a harder brick.

The ores used are Centre County hematites, taken from the Buffalo Run and Barrens groups. The washed ores are

000, and the erection of an iron railway bridge across the Tennessee, the building of a railroad to the top of Walden's Ridge, and other extensive improvements will be begun immediately. The purchasers are headed by John W. Candler, a member-elect of the Fifty-first Congress from Boston.

The Osceola Company.

The annual report of this Lake Superior copper mine shows that the mining profit was \$142,076, of which \$22,907 was expended upon plant, leaving \$119,169 applicable to dividends. The dividend payments were \$150,000, showing failure to earn the same by \$30,831, instead of \$7924, as previously stated. This deficiency was charged to assets of \$235,516 at the beginning of the year, reducing them to \$204,685 January 1, 1889. The statistics of operations for the year were:

	1888.	1887.
Rock stamped, tons.....	183,036	145,200
Mineral, pounds.....	4,833,543	4,184,433
Refined copper, pounds.....	4,134,320	3,583,723
Copper per ton stamp rock, pounds.....	22.59	24.68
Refined copper per cubic fathom ground broken, pounds.....	35.9	377.15
Per cent. mineral in stamp rock.....	1.32	1.44
Per cent. refined copper in stamp rock.....	1.13	1.23
Cost per ton of rock hoisted.....	\$1.95	\$1.75
Cost per ton of rock stamped.....	2.21	2.05
Refined copper, cost at mine.....	9.78¢	8.31¢
Cost of smelting, freight and other expenses.....	1.83¢	1.57¢
Total cost per pound in New York.....	11.16¢	9.88¢

The chief cause of the high cost of refined copper, according to the report, was the reduced amount of refined copper per ton of rock, only 22.59 pounds against an average of 25 pounds for six years. The yield in December was 27.12 pounds, and the January yield will be as good. There was also necessary dead work done. Assets and liabilities January 1, 1889, were:

Assets.	
Cash in Boston.....	\$24,855
Cash at mine.....	1,383
Supplies.....	29,356
Fuel.....	12,312
Accounts receivable at mine.....	33,658
Accounts receivable in Boston.....	120,527
3000 shares T. & O. Mfg. Company.....	15,000
250 shares H. and C. R.R. Company.....	25,000
Copper since sold.....	39,549
Total.....	\$301,643
Liabilities.	
Drafts outstanding.....	\$28,435
Accounts payable at mine.....	37,414
Accounts payable in Boston.....	29,921
Dividends uncalled for.....	1,186
Total.....	\$96,950
Surplus assets.....	204,685
Grand total.....	\$301,643

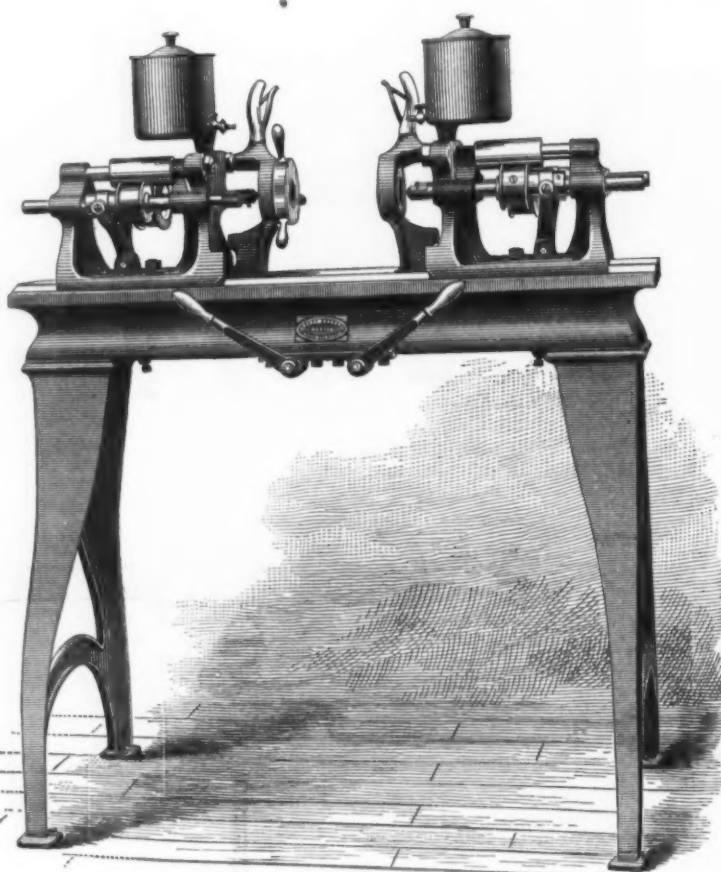
The following statement in the report will be of interest: "It is doubtless well known to our stockholders that this company, as well as nearly all of the other copper producers of the world, have sold their production of copper for about three years to 'La Societe Industrielle et Commerciale des Metaux de Paris,' at 13 cents per pound, and, in addition, such sums as shall be equal to one-half the net profits realized above this price on re-sales thereafter made of said copper. This sale, consummated April 20 last, expires December 31, 1890, and, as a guarantee, a letter of credit in favor of this company was opened by 'Comptoir d'Escompte de Paris,' with J. W. Seligman & Co., of New York, for \$520,000. Thirty days before May 1 next a similar letter of credit is to be furnished, and same is true of the year following. Up to this time this letter of credit has been

reduced to about \$410,000 by deliveries of copper unsold. On re-sales, of course, credits are not drawn against.

Double Center-Drilling and Counter-Sinking Machine.

The large number of turned bolts used in machinery, and the constantly growing demand for more accurate and uniform sizes, led Nicholson & Waterman, of Providence, R. I., to develop as a companion to their special bolt lathes the machine which we herewith illustrate. This tool performs the operation of center-drilling and counter-sinking both ends of bolts or rods at the same time. The nicety of turned work depends very materially upon the accuracy of counter-sinking, and while the opera-

tion of a line drawn from the center of the pivot stud through the center of the shafts are placed two hardened taper recess pieces, into which a tempered center is forced by a spring and is carried by the chuck frame and serves to locate the bolt in the center and in line for drilling. The two shafts are driven by one belt passing over an idler and over a drum pulley on the countershaft. The spindles are advanced by a handle in front of the machine, which is connected by crank and rod to a forked lever. The connection between the lever and the rod is adjustable to accommodate the different positions of the head. The chuck frame consists of a lower lug, through which the pivot stud passes, and which is provided at the upper end with a handle, to one side of which is attached a lever for re-



CENTER DRILLING AND COUNTER-SINKING MACHINE.—NICHOLSON & WATERMAN, PROVIDENCE, R. I.

tion of counter-drilling appears insignificant, yet the numerous handlings for drilling both ends become so considerable an item that very frequently they are omitted, and the center punch driven in with a hammer serves to make the seat for the lathe-centers. It was to perform these operations at one handling and accurately that the machine was designed. Contrary to the usual practice, the centering of the head is done from the sides of the head and not from the stock under the head. The end of the bolt is seized about an inch from the end, away from irregularities caused by shearing. In detail the machine consists of a bed upon which are placed two heads, which may be adjusted to any position to suit the length of the work. As they are duplicates, a description of one will cover both. The head carries a pivot stud a little below the level of the top of the bed and upon which the chuck frame swings. Above this, one on each side, are two sliding shafts, which carry respectively a drill and a countersink. At the

moving the centering pin when changing position. In line with the drilled shafts is placed a scroll chuck for one side (that of the end of the bolt) and interchangeable head holders for the head end. A separate holder is provided for each side of the head, and these holders are made tapering, the standard sizes being in the middle and the tapering allowing for variations in sizes. The depth of the countersink is regulated by the end of the countersink holder, which is tempered and brought against the work. For entering work the two chuck holders are brought forward against two lugs, the chuck being thus in line.

In practice, the operation consists in first placing the bolt in the two chucks, pressing the head end firmly into the holder and screwing down the chuck end. Next, grasping with both hands the two chucks and placing in line with drills, and then pressing down on the levers until sufficient depth of drilling is obtained, and advancing the chucks to the line of the countersinks, pressing the levers for

countersinking, and, finally, returning the chucks to the front of the machine for removing bolts.

THE WEEK.

The Nebraska State Farmers' Alliance estimate the amount of farm mortgages in that State as \$150,000,000, which, at 7 per cent., drains the State to the extent of \$10,500,000 per annum, and this is exclusive of corporate and municipal indebtedness. Artisans in consequence find the conditions of life harder, and manufacturers are compelled to narrow the margins of profit. Thus dealers and manufacturers are driven into the formation of trusts, "which seem pernicious and tyrannical."

Henry A. Gould, dealer in dyestuffs, rubber, gutta percha, &c., in Boston, under the firm name of Henry A. Gould & Co., made a voluntary assignment, with liabilities approaching \$1,000,000 and assets at present unknown. Mr. Gould has branch houses in Philadelphia, New York and London, and a purchasing house in Para, Brazil, the latter being the oldest American house in that city. He is said to have an interest in the reorganized National Rubber Company, the Brookhaven Rubber Shoe Company; also two camphor refineries, one of them at Rumney, N. H., and the other at Stamford, Conn., and is said to control the product of a German manufactory of anilines. About seven years ago the failure of the National Rubber Company, in which Mr. Gould was largely involved, seriously crippled his revenues. Other failures in the rubber trade last year brought further losses, which, report says, would have led to failure long ago but for the backing of Ezra Farnsworth.

Paper doors are said to be great improvements over wooden ones. They are formed of two thick paper boards, stamped and molded into panels and glazed together with glue and potash, and then rolled through heavy rollers. After being covered with a water-proof coating and one that is fire-proof, they are painted, varnished and hung in the usual way.

At the present juncture the views of Secretary Windom in regard to the silver dollar suddenly became of special interest. Referring to the Congressional debate of 1878, on the adoption of the Bland dollar, he expressly favored the remonetization of silver, but opposed the coining of a silver dollar that was not equal in value to a gold dollar. He said: "Several of the leading commercial nations have already adopted the gold dollar as the standard of value, and others are rapidly tending in that direction. If we are to compete for the commerce of the world, and to trade on equal terms with these nations, we must adopt a similar measure of values. Whether the instrument by which values shall be measured be gold or silver makes no difference in my judgment, providing the standards are alike. If, as assumed by the Senator's question, that great instrument of trade and commerce known as the dollar has no recognized value, and one thing may be called a dollar as properly as another, why waste 412½ grains? Why not call 206½ grains a dollar and have twice as many of them?" Mr. Windom finally voted for the Bland dollar, hoping for more favorable action when it became evident that the standard silver coin is deficient in intrinsic value.

Beginning on the first Monday in December, 1887, the Fiftieth Congress continued practically uninterruptedly in session until the 20th of October, 1888, when it adjourned to meet for the second session in December and to continue until March 4, 1889, as required by law. During the

two sessions there have been introduced in the House 12,659 bills, or 1400 more than in the preceding Congress, and 268 joint resolutions, or five more than in the Forty-ninth Congress. Committee reports have been made to the number of 4154. In the Senate 3998 bills and 144 joint resolutions have been introduced, against 3357 bills and 118 resolutions during the Forty-ninth Congress, which broke all previous records in this respect. There were 2706 written reports made, or over 700 in excess of the preceding Congress. Of all these bills and joint resolutions 1791 became laws, of which number 1190 originated in the House and 601 in the Senate. The President also sent veto messages in the case of 99 House and 47 Senate bills, or 14 more vetoes than were made during the previous Congress.

Extensive coal veins underlie the city of Vancouver and crop out on either side.

Pittsburgh had a grand turnout of its skilled laborers on the 22d ult., comprising 10,892 men, nearly all of the Order of American Mechanics, escorted by 55 bands of music. The Catholic societies paraded at the same time and claim to have been as numerous, making 20,000 men in procession during the day.

An iron rooster, recently mounted on a new church steeple, in Brooklyn, was ignominiously taken down by order of the rector, Architect Waller failing to convince him that the "cock was an emblem of St. Peter," and, therefore, of fitting significance.

Estimates about to be submitted to the German Reichstag provide for an outlay of 21,882,570 marks, a large portion of which goes to strengthen the artillery. Of this total 9,390,266 marks will be raised by matricular assessments and 12,298,054 marks by an imperial loan.

Detroit is obtaining subscriptions for an international fair and exposition. Among the names secured are the Michican Stove Company, \$6000; Block Hardware Company, Bela Hubbard and Detroit Stove Works, each \$3000.

The Pennsylvania Railroad Company have purchased 435 feet of water front in Philadelphia at a cost of \$500,000, and rumor says the object is to accommodate a new steamship line.

The recall from Samoa of Herr Knappe, the German Consul, has been promptly followed by the dispatch of Herr Stuebel, formerly Consul General at Copenhagen, to replace him.

The competition of petroleum tank steamers at Philadelphia is making constant inroads upon shipping rates, affecting all classes of vessels. In the coal transportation business there is a similar depression equal to 20 per cent. to San Francisco and South American ports.

A fire-brick trust, capital \$15,000,000, is spoken of in England.

Mines in the Territories are the subject of a report by a Congressional Committee who state that there is invested in mining lands in the Territories by aliens about \$20,503,705, which has paid in dividends about \$4,737,800. The profits may have been greater than this, but certainly the original capital has been returned to the investors. The investment of foreign capital in the mines of the Territories before the passage of the act prohibiting such investments consisted in the purchase of patented claims. The purchasers usually paid a full consideration and frequently exorbitant prices for this property. The money they brought in helped to develop the country. The people of the Territories, the committee says, do not object to the investment of aliens' capital, but

rather invite it, and the committee thinks it would be as well if the law in relation to the matter were repealed.

No less than a dozen industrial and manufacturing companies are applying for the admission of their shares to dealings on the Stock Exchange.

The city of Spokane Falls, Wash. Ter., which has 15,000 inhabitants, was nine years ago the site of Indian wigwams. It is 400 miles east of Puget Sound on the Northern Pacific Railroad.

The assignee of the Pacific Guano Company reports the liabilities to be \$2,487,800; assets, \$422,284. The condition of Glidden & Curtis was stated as follows: Liabilities, \$2,266,836, of which \$424,400 is secured. The assets include items due from the Pacific Guano Company to the amount of \$1,777,757, face value; from the Ohio and Western Coal and Iron Company, cash and coupon account, \$571,421, face value.

A Detroit paper says the unjust action of the Canadian Government, through an "order in council," imposing an export duty of \$3 per 1000 feet on pine sawlogs coming to the United States, is not fully appreciated until the figures relating to the business are exhibited. The export of white pine logs to the United States was less than 5,000,000 feet in 1888, while over 20,000,000 feet of pine logs were imported by the Canadians, unburdened by either export or import duty, from the Lake of the Woods district of Minnesota, sawed into lumber at Rat Portage, and sold to the people of Manitoba. Most of the spruce cut on the upper St. Johns River in Maine is taken to Canada and manufactured into lumber at St. Johns, N. B. During the past ten years logs and masts to the value of over \$100,000,000 have been shipped from the United States to Canada free of duty, while less than \$20,000,000 worth have been exported from Canada to the United States. This shows the injustice of the Canadian export duty.

Accounts from Ogdensburg, N. Y., represent that very extensive smuggling is going on across the St. Lawrence River at various points, and urges that a steam launch should be employed as auxiliary to the revenue cutter, which can only navigate the channel.

The reactionary spirit of the new Emperor of China with reference to modern innovations is manifest in the opposition of the government to the extension of the Tien-tsin Railway. It is reported in a cable message received in London that the recent partial destruction of the Imperial palace is construed by the astrologers as an evil omen, intended as a warning against permitting the approach of the "Western invention" to the Sacred City; and it is said that the further extension of the railway has been prohibited by imperial decree.

The great lumber mills on Puget Sound shut down for eight days, owing to overproduction and a dull market in Southern California.

New York capitalists have subscribed \$17,000,000—\$6,000,000 in cash having been paid on account—for building two railroads through the immense coal fields and hardwood lands of Eastern Kentucky, to connect with the railroad system of Southwest Virginia.

Further information is given out in regard to the Peekskill Bridge Company's affairs, in which the management of the New York and New England Railroad Company are interested. Basing calculations upon the latest reports of the engineers, it is believed that within two years the bridge will be opened for business. The

work on the bridge structure has already begun, and is being carried on slowly on the site selected, preparatory to the construction of the piers. Of the latter there will be only two, one on either bank of the river. This will make the span one of the longest, if not the longest, in the East. Active work is now being done in several iron establishments preparing material for this span.

Congressman F. W. Ahearn, of Bay City, Mich., has purchased an extensive outfit for steel shipbuilding, and the keel for a steamer 280 feet long, to be fitted with the latest improved machinery, has already been laid.

The Pencoyd Iron Company are under contract with the Fifth Avenue Railroad Company, of Brooklyn, to go on with the construction of the road at the rate of 200 feet a day. Judge Barnard's recent decision, President F. Wilhelm says, removes all legal impediments.

Fully \$1,000,000,000 have been disbursed from the United States Treasury in the shape of pension money since the year 1861, and the new appropriation bill calls for \$84,000,000 more.

The Montezuma special Pullman vestibule train will shorten the time between the capital cities of the two Republics to a little more than 100 hours for a journey of nearly 3000 miles.

The Venezuelan Government has contracted for a large number of Italian laborers at the rate of \$23.08 per head, to be employed in the cultivation of ramie as a substitute for hemp, so extensively grown in Central America.

Cleveland, Ohio, builders are seriously considering the expediency of establishing a trade school in that city.

The great hall to be erected on the site of Madison Square Garden in this city will cost, with the site and equipment, \$2,400,000.

The disputed boundary between Alaska and Canada is described, in a report to the Government at Ottawa, as passing through the best gold bearing districts in the country, in the Yukon district.

The President of Honduras calls for more liberal appropriations in aid of bridge-building, wagon roads and steamship subsidies.

Artie B. Cleveland, president of the Cleveland Seed Company, in this city, is said to be a defaulter to the amount of \$150,000. Losses in Wall street are said to have caused the difficulty.

The report of Sir Julian Pauncefoot's appointment as British Minister to the United States is confirmed.

William Beacham, president of the Julian Electric Company, in New York, which is running cars on the Fourth and Madison avenues, testified before a committee of the Massachusetts Legislature that it required six or seven hours to charge a battery; that the batteries in a car weigh 3400 pounds; that they contain sufficient electricity to last six hours; and that it costs 2 cents per car per mile to run cars in New York.

Preparations for opening the Paris Exposition are rapidly maturing. Commissioner-General Franklin and Assistant Commissioner-General Tuck will sail for France in April, and the final shipment of American exhibits will be made on the 9th and 16th inst.

Work at the Staten Island terminals, on wharves and piers, is advancing rapidly, and the three railroads interested in their completion are expected to cross the Kill von Kull bridge within three months.

MANUFACTURING.

Iron and Steel.

Marshall Furnace reports exceedingly satisfactory results since blowing in last month. The average make, prior to the remodeling of the plant by Frank C. Roberts, was 252 tons per week, whereas the present run of two successive weeks is 377 and 385 tons. The superintendent, Major Hiestand, states that he can easily make 400 tons per week. The furnace is the same size as formerly. The fuel consumption has also been reduced by over 500 pounds per ton of iron.

Dalzell & Fox, proprietors of the West Reading Boiler Works, at Reading, Pa., have received a contract to furnish the Ellis & Lessig Steel and Iron Company, Limited, of Pottstown Pa., with 12 steam boilers of 100 horse-power each and 12 stacks for the same.

Carnegie, Phipps & Co., Limited, of Pittsburgh, are shipping to the shipyards of Cramp & Sons, at Philadelphia, some of the largest armor plate ever made in this country. They have just turned out of their Homestead mill two plates which weighed in the aggregate nearly 19,000 pounds. They were 124 inches long by 90 inches in width and 3 inches thick. They weighed 120 pounds to the square foot, and their weight was 9300 pounds each. The plates have been sent to Philadelphia and will be put on one of the new Government cruisers.

The Standard Axle Company, of Wheeling W. Va., recently elected the following officers: John H. Hobbs, president; L. W. Phinney, secretary; A. D. Howe, manager, and Charles L. Hobbs, assistant manager.

At a recent meeting of the board of directors of the Bellaire Nail Works, of Bellaire, Ohio, the question of erecting an additional blast furnace was discussed, and it was decided not to take any action in the matter at present. It is understood that the present unfavorable condition of the iron market was the cause of this decision.

The directors of the Pennsylvania Steel Company met at the office of the company in Philadelphia on Tuesday, February 12, and elected the following officers: President, Luther S. Bent; vice-president and treasurer, Eben F. Barker; secretary, Edmund N. Smith; general manager, F. W. Wood; superintendent, E. C. Felton; assistant superintendent, H. H. Campbell. All of the gentlemen named have long been connected with the company. The changes that have been made in the official staff are all in the line of direct promotion.

Nos. 1 and 2 furnaces, of the Pennsylvania Steel Company, at Steelton, Pa., are idle, while Nos. 3 and 4 are in blast and making a good record.

Chess, Cook & Co., of Pittsburgh, have issued an execution against Graff, Bennett & Co., on an old judgment for \$14,727.75, of which \$7032.40 has been paid, leaving still due \$7695.35.

The Solid Steel Company, Alliance, Ohio, are fitting up separate works for turning out steel castings by the Mitis process. The building is completed and fully fitted for operation. One or two trial heats have already been made.

A press dispatch from Zanesville, Ohio, under date of the 1st inst., reads as follows: "Iron and steel men in this vicinity are much interested in a furnace for the use of fuel gas which has been reconstructed from a Siemens furnace by John H. McGrath, the melter at the steel plant of the Ohio Iron Company, of this city. The furnace was remodeled by cutting

down the chambers containing the checker work used to heat the air and gas before entering the furnace to about one-half the size of the old, and placing the ports from the chambers to the furnace side by side. No estimate as to the saving of coal can be given, as the gas is supplied from the same source as the steel-smelting furnace, but it is said that the consumption of coal is less than in a furnace in the same works built under the Smith patents. By the use of the Smith furnace 9 bushels of slack do the work of 13 bushels of lump coal, and the output is increased from 13 or 14 to 17 or 18 tons per 24 hours. The saving is reckoned at 40 cents on the ton." Of course we do not vouch for the correctness of the above, but give it for what it is worth.

At Pittsburgh, Thursday of last week, J. H. Bailey, assignee of Graff, Bennett & Co., entered suit against the Paulding Iron Company, Limited, for \$79,194.66. The suit is for use of James W. Friend, James M. Bailey and James Pickands, to whom the account was assigned.

At Pittsburgh on Friday, the 1st inst., Deputy United States Marshal Chambers sold at auction the property of C. M. Raymond in West Middlesex, Pa. The property consisted of ground, a rolling mill, chain works, brickyard, kiln, &c. The sale was on judgments on a mortgage held by L. G. Reed, E. A. Wheeler, First National Bank of Sharon and the Sharon National Bank. The concern was formerly known as the Wheeler Iron Company. The property was purchased by R. G. Browne, a broker, for \$8625.

The employees of the blast furnaces in the Mahoning Valley, Ohio, have accepted the reduction of 10 per cent. in wages, mention of which was made in our issue of the 21st ult. It is understood that the reduction will be restored as soon as the condition of the iron market warrants it.

The Chicago Forge and Bolt Company have taken a large contract for the construction of packets for the new ore docks to be built at Two Harbors, Minn., by the Duluth and Iron Range Railroad Company. Extensive preparations are being made by this company for next season's ore business.

The Allegheny Bessemer Steel Company, near Pittsburgh, were to roll their first steel rail on the 4th inst.

We were erroneously advised when we reported recently that P. J. McArdle, of Albany, N. Y., the purchaser of the Jagger property, desired to sell a part of it at a sacrifice. Mr. McArdle informs us that there are about 15 acres of land, with a blast furnace of about 25,000 tons annually. The dockage cost from \$100,000 to \$200,000 to build, and two railroads, the West Shore and the Delaware and Hudson Canal Company, run their cars into the yard. Two hoisting elevators on the dock make it possible to load and unload boats, cars running right to the dock. While on the Hudson River, close to the city of Albany, the property is in the town of Bethlehem, which avoids the city taxes.

Union Furnace, charcoal, of the Union Iron Company, Michigan, made 972 tons in February, with a fuel consumption of 1640 pounds or 82 bushels of charcoal per gross ton of pig iron, the furnace being equipped with cast-iron stoves.

A Chicago dispatch announces that F. T. Wheeler and Lucius S. Fisher, stockholders of the Pullman Iron and Steel Company, filed a bill in the Superior Court Monday asking for the appointment of a receiver for that concern. The company was formed in 1883 with a capital stock of \$500,000, of which \$250,000 was held in equal shares by Frank B. Felt and James P. Perkins,

who turned over to the company patents for making railroad spikes. The rest of the stock, they allege, was taken by George M. Pullman through his private secretary, John M. Smith, and by John W. Doane and others. A rolling mill was erected at Pullman by the company, the complainants allege, but the plant has not been a success. The company is now in debt to the amount of \$300,000, of which \$180,000 is owing to Pullman's Palace Car Company, which kept the iron and steel company running when it was in an insolvent condition. The assets of the company are about \$280,000, consisting mainly of the rolling mill plant.

A company has been organized at Detroit, Mich., to erect works for the manufacture of steel under the process controlled by J. W. Bookwalter. It will be known as the Michigan Steel Company. Press dispatches announce that the works are expected to be completed within three months, and that their output is to reach 150 tons per day.

Works are being built at Joliet, Ill., by the Parsons Railroad Crossing Protector, Switch and Frog Company. They will obtain their materials from the Joliet Steel Company, and expect to employ several hundred hands when in full operation. A switch is to be manufactured which automatically sets danger signals.

Machinery.

The Aetna Machine Company, of Warren, Ohio, recently received an order for two of M. V. Smith's gas furnaces and valves for the Beaver Falls Mills, of Carnegie, Phipps & Co., Limited, also an order for one of Smith's large gas furnaces and valves for the Chicago Horseshoe Company, of Chicago, Ill.

The Columbia Injector Company, Cleveland, Ohio, report an increased demand for their patent injectors. Among their recent sales is one No. 50, which, under 80 pounds of steam pressure, will throw 4000 gallons per hour, sold to the Wheeler Furnace Company, of Sharon, Pa., for their works at Middlesex, Pa., to furnish water for a boiler of 800 horse-power capacity.

Hooker-Colville Steam Pump Works, St. Louis, Mo., report a large increase in their February business over the same month of last year. They have just shipped to a concern in St. Paul, Minn., one of their largest size Hooker feed-water and purifier pumps.

Alfred Box & Co., of 312, 314 and 316 Green street, Philadelphia, have removed to their new works, at Front, Poplar and Canal streets, Philadelphia, where they have increased facilities to carry on their business. They report among their recent orders one of their extra large radial drills to the Union Bridge Company, which makes 22 drills supplied to this company within the last three years. Also an order for six radial drills for the Hilton Bridge Company, of Albany, N. Y., besides large orders from Europe and other places for their double screw hoist.

Morris, Tasker & Co., Philadelphia, Pa., are building a holder of 1,000,000 feet capacity for Philadelphia. They are also about to build for the city of Detroit a 750,000 double-lift holder.

Rohr Bros. & Co., of Harrisonburg, Va., wish the names of the manufacturers of the best ice machines.

During the past year the Buffalo Forge Company, of Buffalo, N. Y., have largely increased their line, adding many new sizes and designs, and greatly improving the construction and workmanship on the goods. All parts of the machines are made interchangeable, and, by the employment of special tools, templates,

presses, dies, &c., the machines have been improved and the cost of manufacture reduced.

J. H. Kase, of Danville, Pa., would like information about the material for making rope binders, cords, &c., and the necessary machinery for doing the work.

The Glamorgan Company, of Lynchburg, Va., ask for the address of manufacturers of compressed paper for making paper pulleys.

The successful bidders on contracts for cabling the West Side street railways of Chicago have just been announced. The Pennsylvania Iron Works, of Reading, Pa., will construct the Madison street power station; Fraser & Chalmers, of Chicago, will build the Milwaukee avenue power station; Robert Wetherill & Co., of Chester, Pa., will furnish the power to operate the loop running through the Washington street tunnel and the south division; Wright, Meysenburg & Co. will construct the cable road on Milwaukee avenue, and the Bullock Mfg. Company will supply the vault machinery. Wright, Meysenburg & Co. will sublet a contract for castings for the Milwaukee avenue road, and bids are now being received from foundrymen. About 4000 tons of yokes and other castings will be required.

F. R. Phillips, 407 Walnut street, Philadelphia, states that the demand for and sales of Post's zero metal for February are more than double any previous month. Mr. Phillips refers to its particular merits, such as durability in wear, coolness of journals under heavy pressure and high speed.

Hardware.

The Findlay Wire Nail Company, of Findlay, Ohio, have been reorganized. Mr. Putnam, of the Putnam Wire Nail Company, is president, and Fred. M. Strong, of Wheeling, W. Va., secretary. The litigation against A. L. Wetherald and his associates, who built the works, is supposed to have been amicably arranged in the reorganization.

A. E. Bronson, of Cleveland, Ohio, well known to the stove and hardware trade, has recently organized a company called the Bronson Supply Company, of which he is the general manager. The purpose of the company is to manufacture and control the sale of different specialties which will be sold largely to the hardware, stove and house-furnishing goods dealers. The address of the company is corner of Lake and Coe streets, Cleveland, Ohio.

Curtis & Curtis, Bridgeport, Conn., have shipped three pipe machines to be used in piping the Paris Exposition. They will also be exhibited there in the American department.

Standard Tool Company, Cleveland, Ohio, are this week moving into their new factory, but will endeavor to fill all orders as promptly as usual. They have greatly enlarged their works, and with their increased facilities will carry a very large stock of the goods they manufacture.

Vulcan Iron Company, Richmond, Va., have nearly completed their arrangements for the manufacture of heel bolts and grass rods, which are used largely in the cotton States. This is the last addition to their line of manufactures, and they expect to have a stock of these goods on hand by the 15th or 20th of the month.

The Syracuse Forging and Gun Company have found it necessary to remove their factory to more commodious buildings at Batavia, N. Y., where they have now nearly 20,000 feet of floor space, which they state is occupied by the best of modern machinery, thus offering facilities for manufacture which they did not enjoy in their former quarters. They re-

fer to Batavia, which is 35 miles east of Buffalo, as offering excellent shipping advantages, so that with their increased facilities they are in a position to give the best attention to orders. The manufacture of the new Baker gun will be under the personal supervision of W. H. Baker, and the output will probably exceed 6000 guns for the coming year.

With reference to the strike in the works of the Enterprise Mfg. Company, Philadelphia, Pa., we have the following advices from the president of the company:

As you are aware, we have a good foundry and have tried to use our men right, and this place is noted for paying high wages to its molders. They were earning a few years ago as high as \$32 and \$33 a week, but the organization to which they belong adopted a rule that they should not earn over \$4.10 a day. Then it was reduced to \$4, and then to \$3.90, where it remains at present; that is, a man must not earn over that amount, their argument being that he is apt to be cut down. Now, to commence our trouble: Some time ago we put two apprentices on, and the molders claimed that this was more than their organization permitted, their rule being one apprentice for every eight molders. I gave them to understand that I did not and would not recognize this, and claimed the right to put on as many as I thought was wise and proper. This was about two months ago. Since that time the molders have been working, as they call it, under protest. Last year we made a lawn mower, and the price for molding the driving-wheel we put at 4½ cents. This year we made another machine and put the price for molding the wheel at 4 cents, there being less work to mold the same and less iron to carry. The Grievance Committee took the matter in hand, and said it was too low and they would not permit it to be made. On this pattern a man can earn \$4 a day and not work extra hard. I gave the committee to understand that we did not intend to be dictated to, but did intend to run our own business, and that we did not recognize their right to interfere in the matter, adding that if the man who had that pattern did not desire to make it for that price he could quit, and they could quit one and all. The consequence was they left, and 11 apprentices followed in their footprints.

Notwithstanding the strike, the company have been running a heat every day, and have 12 hands at work molding, and expect to be able to turn out a fair amount of goods. They are determined not to yield, as they intend to conduct their business without such outside interference.

Miscellaneous.

It is reported by the Waterbury American that the sale of the extensive works of Brown & Bros. to Mr. Clowes, of the firm of Randolph & Clowes, has been consummated by the trustees of that property. Mr. Clowes admitted the fact, but was somewhat reticent as to the use he intended to make of it beyond providing facilities for his increasing trade. It is probable that the business will be extended to specialties in metals other than brass and copper, and that operations in steel and iron are contemplated; experiments have been conducted quietly for some time past, and success is no longer a matter of doubt. The old plant was built for a brass and copper rolling mill, and rumor has it that it may possibly be used for rolling copper again, as the price the present combination exacts for the special shapes in which Randolph & Clowes have to buy their copper for seamless house boilers is so great as seriously to hamper competition with makers who buy sheets as ordinarily rolled.

We have received a very attractive little book, treating of the iridium anti-friction metal made by Merchant & Co., of Philadelphia. *Get*

The new pumps for the Cleveland water works were tested last week and gave satisfaction. Their lifting capacity is 16,000,000 gallons per day. The engines are the largest ever built by the Knowles Company, and cost the city \$79,000.

The Iron Age

New York, Thursday, March 7, 1889.

DAVID WILLIAMS, - - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, JR., - EDITOR.
GEO. W. COPE, - - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - - - HARDWARE EDITOR.
JOHN S. KING, - - - BUSINESS MANAGER.

Commercial Relations With Canada.

During the past week action has been taken both at Washington and Ottawa intended to promote harmonious relations between the two Governments. At the same time the fact comes out incidentally that whatever views may be entertained by Sir Richard Cartwright, the Liberal leader in Canada, or by parties in the United States who may reciprocate the feeling in favor of commercial union, the Government of the Dominion as now constituted under Sir John Macdonald, the present Premier, will hold in scorn any measure, wherever originating, that contemplates a weakening of the ties that bind her to the British Empire. This appears in the defeat of a motion in the Ottawa Parliament, on February 26, which substantially embodied Mr. Cartwright's plea that Canada be permitted to negotiate her own treaties. The fact becomes still more obvious in the manifestation of feeling in response to the adoption of Mr. Hitt's resolution in the United States House of Representatives on the 1st inst.

The resolution provides that whenever it shall be certified to the President that the Government of Canada has declared a decree to establish commercial union with the United States, having a uniform revenue system, like internal tax to be collected and like import duties to be imposed on articles brought into either country upon trade between the United States and Canada, he shall appoint three commissioners to meet those who may be designed to represent the Government of Canada to prepare a plan for the assimilation of the import duties and internal revenue taxes of the two countries, and an equitable division of receipts in a commercial union. The commissioners shall report to the President, who shall lay the report before Congress. The effect of the enactment of the resolution is to declare merely the disposition of this country to enter into a commercial union with Canada as soon as that country makes any advances. The scheme thus outlined becomes at once "a bone of contention" between the two parties represented in the Dominion Parliament, with no definite prospects for the future as concerns either one or the other. Sir Charles Tupper, since his return from England, emphatically denies the report of the intended retirement of Sir John Macdonald. Mr. Foster, the Minister of Finance, announces that the Government has decided to make no change in the existing customs tariff.

The annual reports of the different Lake Superior copper companies, which are coming in one by one, show pretty clearly what a particularly "good thing" to them has been the work of the French syndicate. Profits have been exceedingly hand-

some in spite of the fact that nearly every one of the mines has expended unusual amounts in improving equipment, bettering means of communication or enlarging capacity. The miners have taken care of themselves pretty well in their dealings with the French speculators, and probably their managers congratulate themselves on the brilliant results obtained. The future, however, will bring the day of fearful reckoning in the form of 8 and 9 cent copper, with dividends passed and a crop of assessments.

Placing the Wires Underground.

The ninth convention of the National Electric Light Association, held at Chicago, beginning February 19, was the most valuable yet held, as was evidenced by the character of the attendance, the standard of the papers presented and the lively interest manifested in many of the subjects treated. The most absorbing topic, and one in which the layman has a direct interest equal to that of the expert, was presented by the report of the committee on underground conduits and conductors. This committee was appointed at the previous convention "to examine into and report upon the systems of underground conduits, with underground conductors and conduits now in operation, and the number of wires actually in use in these conduits." The committee sent a circular letter to all the local electric light companies asking if they had ever placed underground any electric light conductors carrying currents at a potential of 1000 volts or over, and, if so, to state the results, giving the length of conductor, the voltage, the current in amperes, the make and style of dynamo, the kind of conductor, single or grouped in cables, size of conductor, thickness of insulation, maker of cable, whether cable was laid directly on the ground or in conduits, style of conduit, time of experiments and operation of cables, and, "if the cables failed to work satisfactorily, to which of the following causes do you attribute the difficulty: Defective insulation, defects in the joints, or defects in making connections from cables to lamps."

Of the 120 answers received by the committee only seven had had actual experience in placing and running underground electric wires, and of this number six were of the opinion that at the present time it was not practicable, either from an electrical, mechanical or commercial standpoint, to place the wires underground. This opinion was forced upon them principally because of the defective insulation of the wires, and next on account of defects in the conduits. The one favorable report was from a writer who had had his wires in conduits for about five years. The mains were carried through the streets in a composite system of conduits, and connections were made from the system to the cellars through iron pipes, and the wires were then conveyed through the cellars, connection being made from the cellars to the houses. The cellars run completely around the block, and permitted of access to them for the purpose of repairing or making connections to the wires. The report states that he considers the question of the distribution of power and light an exceedingly simple one in his city,

which is probably the only one that is so fortunately situated.

Of the remaining number of those who answered the circular 104 state that, basing their opinions upon tests they have made and seen and such information as they have been able to obtain both in this country and abroad, "it has not been practical to place the wires containing high tension electric arc-light currents underground." They consider that the question of obtaining a satisfactory conduit has not been solved, and that there is no "insulation for the wires that will not deteriorate within a few years and become perfectly useless as an insulator when subjected to the action of steam, water and gas." The difficulty of making connections for buildings and lamps, and the absence of an adequate system of subsidiary conduits, is considered as a bar to successful operation. A method of drawing in the cables, without injuring the insulation, is also needed.

The commercial side of the question is of vast importance, as the first cost is about eight times that of an overhead system, and as the repairs due to deterioration of insulation, and defects caused by mechanical and electrical imperfections, are very much heavier than in the aerial system. This would result in a necessary advance in the price of electric light as now furnished, in order to meet the increased expenses.

The circular was also sent to the electric underground wire companies, and in most of the responses received it was stated that, as they had very little or no experience with wires for that purpose, they were unable to give information. They had no doubt but that, having the demand, the conductor could be brought to meet the requirements.

The discussion of this report was long and entertaining, and, in a great measure, contradicted the conclusions drawn from the answers received. It was shown in several large cities underground electric conductors carrying currents at a potential of 1000 volts and over were in successful operation, both from an electrical and commercial standpoint. The trouble resulting from inferior insulation was not nearly so great as stated, this being shown by the fact that cables are now in service which were laid two or three years ago. The statement was also refuted by the manufacturers of cables, who offer to guarantee, by bond, the life of their insulation for three or four years. The mechanical drawbacks, although not as completely obliterated as desirable, are still so far under control as to present no insurmountable obstacle to the operation of the system; nor do they affect the commercial side by unduly increasing the repair account.

As the discussion of the report elicited more data regarding the actual condition of underground projects than were given in the report itself, and, as the opinions were from those who were in intimate relations with stations using underground conductors, and therefore had the requisite practical experience to render their opinions of value, the conclusion is drawn from the session, taken as a whole, that the placing of electric conductors underground is electrically, mechanically and commercially possible.

Russian and American Wheat Competition.

In consequence of the short wheat crop last year in the United States and the wild speculation in this staple in Chicago and New York it gave the pretext for Russia has been able to furnish England, out of an ample yield, amounts fully compensatory for the lessened receipts of wheat and flour from here. The total export of wheat from the United States last year did not exceed 49,531,915 bushels, as compared with 95,128,641 in 1887, while our flour export was restricted to 10,714,780 barrels, as against 12,181,310 in 1887.

The import of wheat and flour into England from all sources during the past three years has been as follows:

	Wheat, cwt.	Flour, cwt.	Equal to bushels.
1886.....	57,224,394	16,912,773	145,477,645
1887.....	55,784,685	18,056,545	145,403,576
1888.....	47,404,344	14,739,232	122,177,780

Russia, Roumania and Russian Poland exported to England the following amounts of wheat in bushels:

	Russia.	Rou- mania.	Russian Poland.	Totals.
1886....	6,925,578	541,796	2,460,365	9,927,679
1887....	10,309,176	1,062,659	2,896,578	14,268,413
1888....	39,888,414	2,648,948	6,094,322	48,631,684

From the foregoing figures it appears that the increase in the export from Eastern Europe to England between 1886 and 1888 amounted to 38,704,005 bushels. On the other hand, the United States and Canada furnished England the following amounts:

	United States.— Flour. Wheat. cwt. cwt.	Canada.— Wheat. Equal to cwt. bushels.
1886.....	11,473,192 29,621,728	3,080,064 77,936,131
1887....	14,873,443 30,504,526	3,964,784 98,334,589
1888....	12,557,066 14,547,195	1,089,080 57,889,650

On comparing the total shipments of wheat and flour in 1888 with the total in 1887 it will be found that there has been a decrease of 40,444,939 bushels. In other words, while this falling off in the supply from America occurred there was, as shown above, an increase of 38,704,005 bushels between 1886 and 1888 from Eastern Europe. This turning of the tables, of course, could not have taken place if the Eastern European crop had not been so abundant of late years and the quantity marketed so desirable. It shows the vigorous competition which our wheat and flour will have to encounter whenever there happens to be even a trifling shortage on this side. In consequence of the exaggerated bull speculation in Chicago and New York our exports are stopped for months.

Our export of flour to countries south of us has also severely suffered from a similar cause, especially shipments to Brazil, which have to compete with Hungarian shipped by steamers direct from Fiume and Trieste to Rio de Janeiro. During the first eleven months of last year the Hungarian flour shipments reached 1,533,583 barrels, the bulk of which went to Brazil, a country which received from the United States in 1887 748,937 barrels. Of course the abundance of the Austro-Hungarian wheat crop and comparatively low prices facilitated a large flour export to countries south of us from Hungary, whose magnificent steam flour mills turn out a quality of flour by no means inferior to our crack brands from Baltimore, St. Louis and Richmond, and which will keep in a tropical climate just as sweet as American. All this has occurred in a year when British India and Australia did not ship

to England any extraordinary amounts of wheat, as the following figures prove:

British India, Australia.

	Cwt.	Cwt.	Equal to cwt.
1886.....	11,028,665	738,699	21,965,746
1887.....	9,967,107	1,347,151	20,343,281
1888.....	8,423,155	2,315,700	20,045,863

The Indian railroad system is extending rapidly, there being in running order on March 31, 1888, 14,333 miles. During an abundant wheat crop year an extra stimulus may be given to exportation thence, now that the great wheat belt of British India is being tapped at more points than was formerly the case. It is to be hoped that a more copious wheat yield, combined with more moderate prices, may enable us to regain the superior foothold with our wheat and flour we partially lost in Europe and South America in 1888.

German Silver and Brass Scrap.

A matter which has received little attention from the metal trade at large is the question of the re-importation of German silver and brass scrap. It was brought before the Senate Finance Committee during the close of last year in a number of hearings to representatives of such firms as the Coe Brass Mfg. Company, of Torrington, Plume & Atwood Mfg. Company, Waterbury Brass Company, Benedict & Burnham Mfg. Company, Holmes, Booth & Haydens, Ansonia Brass and Copper Company, Osborne & Cheeseman Company, and the Seymour Mfg. Company, all of them located in the famous Naugatuck Valley. H. H. H. Wooster, of the last named concern, and Charles F. Brooker, of the first corporation, presented a petition in behalf of their associates and explained their views at length.

During the past few years American manufacturers of brass and German silver have been doing an increasing business with foreign countries, supplying makers there with sheet-metal for the manufacture of German silver tableware, show-case frames, and for cartridges. Their customers cut up the sheets in question, and according to the articles made therefrom from 30 to 60 per cent. of the metal so exported becomes scrap. Now, it is a custom, naturally growing out of the character of the business of the two parties to the transaction, that the rolling mill sells to the manufacturer with the understanding that it will take back, at a given price, the scrap produced in the process of cutting up. A seller who cannot undertake to go into such an arrangement is at a disadvantage, because the buyer prefers not to be troubled with the marketing of the scrap.

Now, our tariff imposes upon all German silver scrap a duty of 25 per cent. ad valorem, and upon brass scrap 1½ cents a pound. In the cost of German silver, according to the testimony of Mr. Wooster, this amounts to a minimum of 3 cents per pound on German silver scrap returned from Canada from a fork and spoon manufacturer, as much as 60 per cent. of the original metal returning. In other words, by reason of the duty on scrap returned, the American rolling mill is handicapped to the extent of 1.8 cent per pound on the original metal. But the matter goes even further still. When the American manufacturer uses foreign nickel—which he must do to a considerable extent, because

the American mine does not supply the demand—he is barred from obtaining a drawback on the nickel contents of the alloy. When the scrap returns to him he again pays a duty on the same article. In that case the aggregate duty on the metal that goes out again is figured at 4.08 cents by Mr. Wooster.

What the manufacturers of the Naugatuck Valley have pleaded for particularly, and what they seem justly entitled to, is that at least scrap from their own metal be allowed to enter free of duty, providing its identity can be satisfactorily established. They argue with much force that no American interest can suffer from such a system, but that its establishment will lift burdens imposed upon a foreign trade which can only benefit the country. The only serious objection raised by members of the Senate Committee—an objection which would naturally occur when the matter is presented—is that imports of scrap might be used to evade the payment of duty on constituents of the alloy. It was suggested that alleged scrap might be made to contain 50 per cent. of nickel, and the idea was even brought forward that the metal might be profitably separated from the alloy. In the case of nickel-copper-zinc alloys, this may at once be dismissed as impracticable. A high-grade alloy might, however, be used to make the ordinary grade by the simple addition of the necessary quantities of the baser metals. The Naugatuck Valley manufacturers framed the suggested paragraph in the free list, in the following manner, in order to meet the objection raised:

German silver scrap, containing not to exceed 25 per cent. nickel, made from German silver, the product of the United States, returned after having been exported, without having been advanced in value or improved in condition; but proof of the identity of such scrap shall be made under general regulations to be prescribed by the Secretary of the Treasury.

The manufacturers approached with more hesitation the question of dealing with a drawback, formulating the clause as follows:

There shall be allowed on all articles manufactured in part or materials imported, on which duties have been paid when exported, a drawback equal in amount to the duty once paid on such materials, and no more, to be ascertained under such rules and regulations as shall be prescribed by the Secretary of the Treasury. Ten per cent. on the amount of all drawbacks so allowed shall, however, be retained for the use of the United States by the collectors paying such drawbacks, respectively.

The evidence in regard to this suggestion is accompanied simply with this sentence: "It opens the door very wide, and so we have not much to say in favor of that clause." It would certainly be a somewhat difficult matter to extend the drawback system to single constituents of alloys used for manufacturing, but there seems to be a simple way out of the trouble, so far as the Naugatuck Valley manufacturers are concerned. Let them import all the copper, nickel and spelter used in making their German silver. This is being done with solder and there is no reason why it should not be done in the case of other alloys.

The pressure of work at the Government foundry at Washington is such that the construction of the main shafts for the new cruisers, Concord and Bennington, has been assigned to the Midvale Steel Com-

pany, and that firm are also turning out the steel forging for 12 new ordnance rifles of mark III, 6-inch pattern. The shafts are made of hammered steel and comprise 14 separate pieces. These pieces are sent in an unfinished condition to the West Point foundry, where they are turned down to the proper dimensions and bored out. The work will be finally completed about May 1, and the shafts will then be shipped direct from West Point to the Chester shipyard. The forgings for the rifles will be sent from the Midvale works to the Government foundry at Washington to be tempered, and from there half of them will go the West Point foundry and the rest to the South Boston Iron Works, at Boston, where the guns are to be constructed.

The Paris Universal Exposition.

GENERAL VIEW OF BUILDINGS.

The double-page plate which accompanies this week's issue of *The Iron Age* conveys a fair idea of the magnitude of the buildings. The view taken embraces the two series of structures on either side of the center line of the grounds, occupied at one end by the famous Eiffel tower and on the other end by the great machinery hall, the center line of which is placed at right angles to it. Neither of these structures is shown in our engraving, which, therefore, gives an idea of only two of the smaller buildings in course of construction.

PLANS OF THE BUILDINGS.

We are indebted to the *Génie Civil*, published in Paris, for the accompanying general plan of the buildings of the Universal Exposition, which is to be opened in a few months. The necessary reduction has made it impossible to enter in our drawing all the lettering. A reference to the following list, with accompanying numbers, will enable our readers to locate the principal buildings, countries and exhibitors. Beginning at the upper left-hand corner we have:

1. Panorama of the Transatlantic Steamship Company.
2. Agricultural Exposition.
3. International Petroleum Company.
4. Elevators: Thomas Powell and De Quilliac and Mounier.
5. Le Duc de Felico.
6. History of Habitation.
7. Champ de Mars Station.
8. Finland.
9. Norwegian Cottage.
10. Gas Company.
11. Swedish Cottage.
12. Printing and Office of Exhibition.
13. Aquarelles.
14. Pastels.
15. Monaco.
16. Foundations of Eiffel Tower.
17. Suez and Panama Canals.
18. Argentine Republic.
19. Mexico.
20. Customs.
21. Children's Hall.
22. Venezuela.
23. Bolivia.
24. Brazil.

Returning to the buildings along the Avenue de Labourdonnais we have:

25. Electric Station.
26. Forges du Nord.
27. Dillemont Company.
28. English Colonies.
29. Great Britain.
30. Belgium.
31. Société de Mariemont (collieries).
32. Denmark.
33. Holland.
34. The City of Paris.
35. Belgian Headquarters.
36. The Solvay Company (soda).
37. Cape Colony—The Kimberly Diamond Mines.
38. Fonderies et Forges de l'Horme (iron and steel).
39. Anciens Etablissements Cail (bridge builders, machinery and structural work).
40. Forges de St. Dennis (iron and steel).
41. Union Céramique Chaufourrière Montchavise.

Near the Eiffel Tower are located also the following:

46. Folies Parisiennes (theatre).
47. Humfreys.
48. Restaurant.
49. State Manufactures.
50. Telephone Company.

On the other side of the tower there are, near the Avenue de Suffren:

51. Chili.
52. Nicaragua.
53. The Lota Company (Chili copper).
54. Salvador.
55. Valard & Cellard.
56. Uruguay.
57. San Domingo.
58. Uruguay.
59. Guatemala.
60. Liberal Arts.
61. Hayti.
62. India.

The following are in the Hall of Liberal Arts:

64. Restaurant.
65. Geography.
66. Cosmography.
67. Ministry of the Interior.
68. Foreign Countries.
69. Italy.
70. Switzerland.
71. United States.
72. Spain.
73. Portugal.
74. Roumania.
75. Norway.
76. Greece.
77. Life-Saving at Sea.
78. Servia.
79. Japan.
80. Siam.
81. China.
82. Roumania Restaurant.
83. Russian House.
84. Morocco.
85. Egyptian Bazar.
86. Egypt.
87. Persia.

Turning to that part of the principal hall for various groups which lies near the Avenue de Labourdonnais, we have the following countries:

89. Hungary.
90. Austria.
91. Jewelry.
92. Laces, &c.
93. Clothing.
94. Hats and Bonnets.
95. Silks.
96. Coaches.
97. Bleaching and Dyeing.
98. Camp Materials.
99. Chemical Products.
100. Forestry, Hunting and Fishing.

On the other side in the same building there are:

102. Silver Ware.
103. Ceramics.
104. Furniture.
105. Mosaics.
106. Russia.
107. Glassware.
108. Tapestry and Decorations.
109. Carpets.
110. Clocks and Watches.
111. Leather Goods.
112. Perfumery.
113. Stationery.
114. Art Castings.
115. Mining.
116. Bronzes.
117. Stoves and Heaters.

Between this hall and Machinery Hall are the following buildings.

118. Restaurant.
119. The Gramme Company (Electric).
120. Station of the Syndicate.
121. Lecounteux & Garnier.

At the end of the Avenue de Suffren we find, back of Machinery Hall:

122. Station.
123. Police.
124. Sulac and Fontaine boilers.
125. Megy, Echeverria, Boran lights.
126. Fives Lille and Pamtin boilers.
127. Bakers' ovens.
128. Belleville boilers.
129. Works of Ducommun.
130. Naeyer boilers.
131. Roser boilers.
132. Joydé and Pillé boilers.
133. Bakers' ovens.
134. Babcock & Wilcox boilers.
135. Restaurant.

Returning to the Hall of Liberal Arts we have:

136. Instruments of Precision.
137. Medicine and Surgery.
138. Holland.
139. Belgium.
140. Switzerland.

The position of the different countries in Machinery Hall is fixed only in a few cases. The United States have a relatively large space near one corner of the hall.

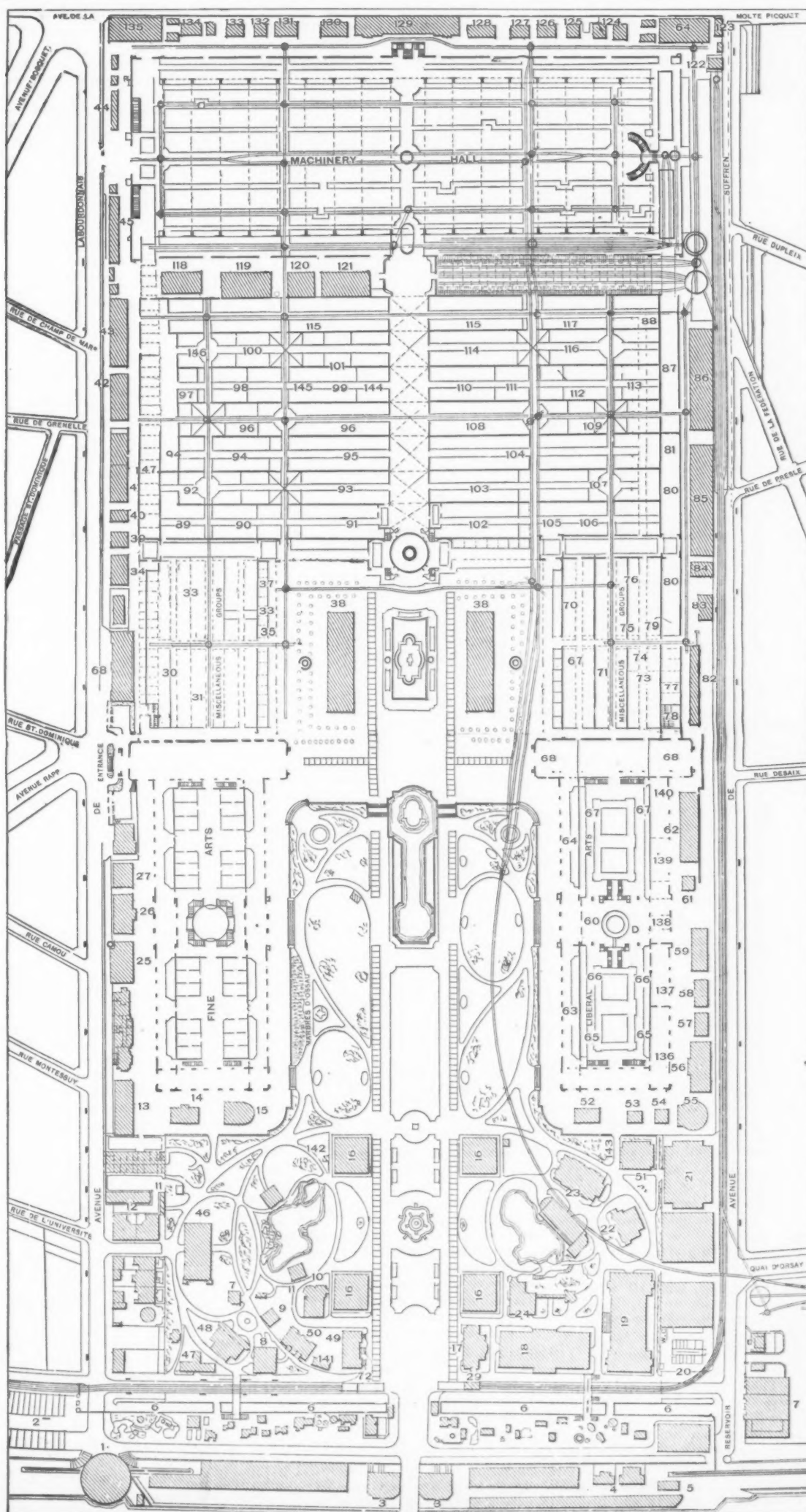
Among the corporations which have recently been authorized by the Secretary of State of Illinois, are the following: Rogers Siberian Iron and Tin Plate Company, Chicago; capital, \$200,000; to manufacture sheet iron and tin plates; William Rogers, W. E. Dustin, S. W. Adams and C. S. Radding. The Coleman White Lead Company, at Chicago; capital, \$200,000; for manufacturing; incorporators, G. D. Coleman, R. R. Bemiss and W. L. Dustin. Novelty Lock Company, Chicago; capital, \$200,000; to manufacture locks and light hardware; incorporators, W. A. Gardner, P. Hale and W. Rice. Walcott Mfg Company, Chicago; capital, \$100,000; to manufacture heat-traps and hardware; incorporators, A. Walcott, F. W. Childs and M. R. Dill. The Patton Motor Mfg Company, at Chicago; capital \$250,000; to manufacture and sell motors; incorporators, W. H. Dyrenforth, Charles E. Gaylord and J. W. Dyrenforth. The Energy Mfg Company, at Chicago; capital, \$10,000; for the manufacture of hardware and other patented articles; incorporators, William H. Fry, Daniel A. Ray and Charles C. Tillman.

The official report of the recent trial of the gunboat Yorktown, submitted to Secretary Whitney last week, shows that the vessel meets all the principal requirements of the contract, and that on the trial she developed 400 more horse-power than is called for by the contract, thereby entitling the contractors to a bonus of \$40,000, or at the rate of \$1000 for each horse-power in excess. It is probable that the vessel will be formally accepted by Secretary Whitney. None of the other vessels of the new navy, the construction of which was begun during Secretary Whitney's administration, is yet completed. Therefore, in case of its acceptance, the Yorktown will be more closely identified with the past administration than any of her sister ships.

At a meeting of the Youngstown (Ohio) committee of freight agents, held at Cleveland, Ohio, on the 27th ult., the following pig iron rates from the Mahoning Valley, Ohio, and the Shenango Valley, Pa., were made: Boston, \$4.20; New York, \$3.20; Albany, \$2.70; Rochester, \$1.95; Utica, \$2.60. The rates on limestone from the above named places were also equalized.

The sample ingot of aluminium exhibited at the meeting of the American Institute of Mining Engineers recently was not made by A. E. Hunt, of Pittsburgh, as stated, but was manufactured by the Magnesium and Aluminium Fabrik, of Bremen, Germany. Mr. Hunt informs us that the works with which he is connected are ready to furnish aluminium in any reasonable quantity, up to a ton, for immediate delivery. He disclaims, however, that he is the inventor of the process.

The contract for docks and trestles of the Central Dock and Terminal Company in Buffalo, has been awarded to W. F. Wentz, of Moreland, N. Y. The work will cost about \$300,000, and is for the handling of the Reading and other shipments of coal. Work will begin as soon as the weather permits, and is to be finished in one year.



PLAN OF THE PARIS EXPOSITION.

TRADE REPORT.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., March 5, 1889.

Pig Iron.—The market maintains a firm tone, although it cannot be said to have gained much within the past couple of weeks. There is a good demand, however, and the outlook indicates continued steadiness if not actual improvement. Good brands are readily placed at, say, \$15.50 for Gray Forge; \$16 @ \$16.50 for No. 2, and \$17.50 @ \$18 for No. 1, tide-water deliveries, or their equivalent. Occasional sales are reported at less money, but they are exceptional, and not fair representative transactions. A few specially favorite Irons command a premium on the highest quotations named, but they, too, are a little outside of the general market. As to the supply it is not by any means excessive. There are a good many sellers, it is true, and moderately large orders could be placed at quoted rates, although sellers are on the watch for an improvement, and have some degree of confidence that such an event is not improbable. Of course, no one looks for much change, but 25¢ to 50¢ per ton of an advance would be an important item in times like these. Hence, if the South and the West continue to report favorably, local furnaces would soon feel warranted in asking an advance, and perhaps with some degree of success. This feeling of itself proves that the market has turned. It is no longer a question of concessions from quoted rates, but rather as to how large an order should be taken, or whether an advance should be asked. This is undoubtedly the case to-day as regards the good brands, although it may take some little time yet to settle the matter satisfactorily. This market appears to be in a position to easily keep in line with the South and West, but it cannot improve unless they initiate a similar movement. It may be said, therefore, that the market is a waiting one, steady to firm at quoted rates, with a tendency toward improvement under anything like favorable developments.

Foreign Iron.—There is nothing doing at present, although asking rates are as before, viz., Bessemer, \$19.50 to \$20, c. i. f., duty paid. Spiegeleisen, \$28.25 @ \$28.50, c. i. f., duty paid, for 20 %.

Blooms.—A very considerable business has been done in Steel Slabs, Billets, &c., and in most cases at about the rates quoted for some time past. Sales include several thousand tons Nail Slabs at from \$29 to \$29.50, delivered at consumer's works, Sheet Iron Billets at \$30 @ \$31, delivered, and higher qualities for Boiler Plate, &c., all the way from \$34 to \$40, according to specification. Ordinary quotations are about as follows: \$28 @ \$28.50 at mill, for Nail Slabs; \$29 @ \$30 for Sheet Iron Billets; \$30 @ \$31 for Soft Tank, and \$35 @ \$36 for Flange purposes; Charcoal Blooms, \$52 @ \$54; Run-out Anthracite, \$41 @ \$42.50; Scrap Blooms, \$32 @ \$33 per "Bloom" ton of 2464 lb.

Muck Bars.—The market continues in a very unsettled condition, with all sorts of prices, and probably all sorts of Bars. Good, reliable qualities are offered at \$27 @ \$27.50, delivered, although as low as \$25.50 @ \$26, at mill, would be accepted for some qualities.

Bar Iron.—There is no improvement whatever. Large orders are not offered at present, either for Bars or Skelp, so that mills are either running on old contracts or on such small orders as can be picked up from day to day. Most of the mills are running single turn, and at the moment there is nothing in sight to encour-

age much hope of early improvement. Prices are necessarily very much unsettled, and while the best brands of Refined Bars are quoted at 1.80¢ @ 1.85¢, there is no scarcity of what the makers call "first-class Iron" at 1.70¢ @ 1.75¢. Skelp Iron is quoted at 1.75¢ for Grooved and 1.85 @ 1.90¢ for Sheared, but there is nothing of importance doing at present. The trade have been surprised to-day by a notice from the Reading Iron Works calling a meeting of creditors for Thursday. It is presumed that the assets will cover all liabilities, and that with an extension of time dollar for dollar will be paid, although, of course, it is all guesswork until after the meeting as above mentioned.

Plate and Tank Material.—In a general way the market is dull and without any definite prospect of immediate improvement. Some large orders for Steel Plates have been taken, but they are likely to be placed in the Western part of the State, so that local mills are not getting much advantage from that order (the new St. Louis Bridge). Still there is a great deal of local work going on, so that there ought to be a continuously heavy demand for Plates during the next three or four months. Large consumers, such as Ship, Bridge, Locomotive and Boiler works, are all busy, so that there should be a corresponding demand for materials. Meanwhile competition is sharp and prices irregular, although ordinarily quoted as follows: 1.90¢ @ 2¢ for Ordinary Plates and Tank Plates, 2.1¢ @ 2.2¢ for Universal Plates; Shell, 2.4¢ @ 2.5¢; Flange, 3.5¢; Fire-Box, 4¢; Steel Plates, Tank and Ship Plate, 2.1¢ @ 2.25¢; Shell, 2.7¢; Flange, 3¢ @ 3½¢; Fire-Box, 3½¢ @ 4½¢.

Structural Material.—The general demand is slow and unsatisfactory, and large orders when placed on the market seem to be taken by mills at a distance. The material for the St. Louis Bridge (about 6000 tons of Steel) was placed a few days ago, but prices are said to have been extremely low, and only a portion of the order will be filled in this vicinity. Nominal quotations are about as follows: Bridge Plate, 2¢ @ 2.1¢; Angles, 1.95¢ @ 2.05¢; Tees, 2.4¢ @ 2.6¢; Beams and Channels, 2.8¢ for Iron or Steel.

Sheet Iron.—The demand for Light Sheet and specialties is good, considering the season. J. Wood & Bro.'s Heavy Sheet mill closed down last week, this department being very dull. Alan Wood Company are running both mills, having a fair line of orders for all of their departments. Prices as follows:

Best Refined, Nos. 26, 27 and 28.....	3 @ 3¼¢
Best Refined, Nos. 18 to 25.....	2½ @ 3 ¢
Common, ½¢ less than the above.	
Best Bloom Sheets, Nos. 26 to 28.....	4 @ 4¼¢
Best Bloom Sheets, Nos. 22 to 25.....	3¾ @ 4 ¢
Best Bloom Sheets, Nos. 16 to 21.....	3¼ @ 3½¢
Blue Annealed.....	2½ @ 2¾¢
Best Bloom, Galvanized, discount.....	65 %
Common, discount.....	67½ %

Steel Rails.—The market is not active by any means, but there is a feeling of confidence that promises better things in the near future. A good many small lots are being taken, and with upward of 600,000 tons already sold for this year's delivery, the outlook is decidedly more favorable than it was last year at this time. Prices are steady at \$27.50 @ \$28, at mill, with sales in accordance therewith.

Steel Crop Ends.—There is a good demand, but prices are a little too high to permit of business being done. English Basic Crops, \$22.50, with buyers at \$22, c. i. f., duty paid.

Old Rails.—There is very little doing in spot lots, holders being unwilling to meet the figures now attainable. Lots in store are held at \$24 and upward, and shipments at \$23.50, but sales are chiefly

in small lots delivered along the line of roads at from \$24 to \$24.25, according to circumstances.

Scrap Iron.—In good demand at from \$20.50 to \$21 for cargo lots, with sellers at about the following quotations: \$20.50 @ \$21 for cargo lots; \$21 @ \$21.50 for car-load lots, delivered, or for choice \$22; No. 2 do., \$14 @ \$15; Turnings, \$13 @ \$14; Old Steel Rails, \$20 @ \$21; Cast Scrap, \$15 @ \$16; do. Borings, \$9 @ \$10; Old Fish Plates, \$23 @ \$24; Old Car-Wheels, \$17 @ \$18, Philadelphia.

Wrought-Iron Pipe.—Business is very dull, and, while discounts are nominally unchanged, they are liable to be sharply cut on offers for large lots. Nominal discounts are as follows: Butt-Welded Black, 55 %; Lap-Welded Black, 65 %; Butt-Welded Galvanized, 45 %; Lap-Welded Galvanized, 55 %; Boiler Tubes, 62½ %.

Nails.—Dull, weak and irregular. Prices hard to quote, although store prices for best makes remain at from \$1.90 to \$2, with the usual rebate on car-load lots.

The partnership between Mr. Wm. R. Hart and Mr. George T. Barns, under the firm name of Wm. R. Hart & Co., terminated on March 1. Mr. Hart will continue business on his own account at the former address under the same title as before, while Mr. Barns will have his office at 312 Walnut street, and do business under the firm name of George T. Barns & Co.

Pittsburgh.

Office of *The Iron Age*, 77 Fourth Ave., PITTSBURGH, March 5, 1889.

Prices continue unsettled and unsatisfactory, but with an improved demand better prices will follow. There has been a largely increased business in Pig Iron during the past week, a considerable portion of which was at an advance of 25¢ per ton. Very large shipments of glassware have been made recently by river, and Gray's Iron Line will get out a couple of tows this week, chiefly of Rails; one of these will go through to New Orleans. One of the Gray boats can take a cargo of 4000 tons. The outlook for our manufacturers is generally favorable, and in some lines there is now a fairly good business. The river Coal trade continues in a most unsatisfactory condition, and the outlook for an improvement soon is not very encouraging. Southern Coal is becoming a formidable competitor to Pittsburgh Coal in Southern markets. At New Orleans, the largest distributing point in the South, the prices scarcely cover lay-down cost from Pittsburgh. Some 6,000,000 or 7,000,000 bushels will be started down the river within the next day or two, a considerable proportion of which goes through to New Orleans.

Pig Iron.—The demand continues to increase; consumers who would not a week ago buy a ton beyond their immediate necessities are now anxious to anticipate future wants, as some have done, and that, too, at an advance of 25¢ on the prices of a week ago, when there were plenty of sellers and scarcely any buyers, whereas it is now the other way, the tables having been turned, as the former outnumber the latter. There is no boom, nor is such a thing desired, but there is a largely increased volume of legitimate business and a very much stronger market. A number of sales of Mill Iron were reported at an advance of 25¢, and Bessemer is also stiff at an advance of from 25¢ to 50¢ per ton. We now quote as follows:

Gray Forge Neutral.....	\$14.25 @ \$14.50, c. i. f.
All Ore Mill.....	15.50 @ 16.00, "
White and Mottled.....	13.50 @ 14.00, "
No. 1 Foundry.....	16.00 @ 16.50, "

No. 2 Foundry.....	15.25 @	15.50, "
No. 2 Charcoal Foundry.....	21.50 @	22.50, "
No. 1 Charcoal Foundry.....	23.50 @	24.00, "
Cold Blast Charcoal.....	25.00 @	27.00, "
Bessemer Iron.....	16.50 @	16.75, "

Muck Bar.—There is some inquiry for future delivery at about \$27 @ \$27.25, cash, but while it can be bought for immediate delivery at the prices quoted, sellers are not disposed to contract ahead, indicating that they look for a better market in the near future and intend to keep themselves in position to take advantage of the same. A large buyer who has been on the market for some days past reports having found but few sellers who were willing to contract ahead.

Spiegel.—Spiegel is quoted at \$28.50 @ \$29 for 20 %. Ferro-manganese is firmer, with an increasing demand; is quoted at \$56.50 @ \$57 for 80 %.

Manufactured Iron.—There is an increasing demand, but trade is far from being active; however, now that the raw article has stiffened, we may look for orders to come forward more freely, as the high demand has been caused by a disposition on the part of buyers to hold back until there was some assurance that hard pan had been reached. Moreover, from the fact that both jobbers and large consumers have been holding off as stated, it is evident that, as a rule, they are low in stock, which will have to be replenished. Prices for first quality Iron quoted at 1.70¢ @ 1.75¢ for Bars, 2.10 @ 2.20¢ for Plates, 2.70¢ @ 2.80¢ for No. 24 Sheet. Skelp Iron, 1.60¢ @ 1.65¢ for Grooved, and 1.90¢ @ 1.95¢ for Sheared—all 60 days, 2 % off for cash.

Nails.—There is no improvement in the Nail trade. In this market the trade is very dull for this season of the year, and there does not appear to be much prospect of an early change for the better. Pittsburgh manufacturers refuse to sell below Pittsburgh card rates—\$1.90, 60 days, 2 % off for cash—but buyers can do better elsewhere.

Wrought-Iron Pipe.—There is more inquiry, and it is expected that there will be a considerably increased volume of business as soon as the fine weather opens up, so that outdoor work can be prosecuted with some degree of satisfaction. The market, however, continues in an unsettled and unsatisfactory condition. We quote discounts for large lines: Black Butt-Welded Pipe, 57½ and 5 %; Galvanized do., 55 %; Black Lap-Welded, 67½ and 5 %; Galvanized do., 57½ %; 2-inch Tubing, 11¢ @ foot net; ¾-inch Casing, 35¢ @ foot; Boiler Tubes, 65 % off regular list.

Old Rails.—There is more inquiry reported, but no recent sales, in the absence of which we quote nominally at \$23 @ \$23.50, cash. It is expected that the mills in the Shenango and Mahoning valleys will be on the market before long, and, if so, a largely increased volume of business may be looked for. Sellers here have hopes of better prices as soon as the busy season opens up. Old Steel Rails in the absence of sales may be quoted at \$17.50 @ \$18 for short and \$19.50 @ \$20 for long lengths.

Steel Rails.—Heavy Sections are still quoted at \$28 @ \$28.50, cash, at mill, for small lots, but large lots, it is said, have been booked here as low as \$26. The rail mill of the Allegheny Bessemer Company is about ready to start up on rails; it has been making Ingots for some weeks past. This company have several large contracts, booked some time ago.

Billets, &c.—Bessemer Steel Blooms and Billets remain about as last quoted, \$27.50 @ \$28, with a light demand. Domestic Bloom Ends nominal at \$17.50 @ 18, and Rail Crops at \$18 @ 18.50.

Railway Track Supplies.—There is no change to note in prices. Spikes, 2.10¢, 30 days; Splice Bars, 1.70¢ @ 1.80¢; Track Bolts, 2.75¢ with Square and 2.85¢ with Hexagon Nuts.

Merchant Steel.—Trade fair; prices unchanged. Best brands Tool Steel, 8½¢ @ 1b; Crucible Spring, 4½¢; Crucible Machinery, 5¢; Open Hearth do., 2½¢.

Old Material.—The demand continues rather light, while prices remain unchanged. No. 1 Wrought Scrap, \$20 @ \$20.50, net ton; Wrought Turnings, \$13 @ \$13.50; Car Axles, \$24.50 @ \$25; Cast Scrap, \$14.50 @ \$15, gross; Cast Borings, \$11 @ \$12; Old Car-Wheels, \$19.

Cleveland.

CLEVELAND, March 4, 1889.

Iron Ore.—The furnacemen are making liberal inquiries for new Ore, but prices remain unfixed. A large consumer writing during the week for 15,000 tons of Chapin Ore, May delivery, received an offer of the lot at \$5.15 @ ton. At the office of the Chapin Mining Company it is intimated that opening prices will be fixed at \$5.10 @ \$5.20. About 3000 tons of this Ore on the dock was sold during the past week at \$5.25 @ ton, for immediate delivery. At the headquarters of the Republic and Champion companies \$5.85 @ \$6 are talked of for opening figures. There is every prospect of heavy sales of Gogebic Bessemer early in the season, at prices varying from \$5.10 to \$5.25. The improvement in the Pig Iron situation has materially strengthened the Ore market, and negotiations are known to be pending for several round lots of new Ore at prices from 20¢ to 50¢ in advance of last season's opening prices, and not far from 25¢ below the prices prevailing at the close of navigation, 1888. The formality of fixing prices for high grade Bessemer Ores is likely to be delayed until the upward movement in the Bessemer Pig Iron market has reached its limit. If prices for the latter commodity continue to improve, the first sales of No. 1 Specular and Magnetic Bessemer Ores will likely be made at \$6 @ ton. The situation is, therefore, at present one of active inquiry on the part of buyers and of a high degree of confidence among the mine owners and agents. The vessel men have proven by careful calculations that the average price paid for bringing Ore from Ashland to lower lake ports last season was \$1.46 @ ton. Estimating from this basis, they are claiming \$1.45, and possibly \$1.50 as the probable season rate from the head of Lake Superior, with a probable rate of \$1.35 from Marquette and \$1.20 from Escanaba. Permanent carrying rates are, however, likely to be fixed about 10¢ @ ton less than is now claimed by the vessel owners. There is practically no unsold Ore on the docks, while about 20,000 tons, already sold, have been sent to the furnaces. An interior furnaceman consented during the week to accept 5000 tons of new Ore, delivered in May, in place of the same quantity purchased last season and now lying on the docks. The old Ore, a non-Bessemer grade, was promptly disposed of at \$4.10 @ ton, which amount seems likely to be fixed upon as an average quotation for non-Bessemer Ores for the coming season.

Pig Iron.—Bessemer Irons have sold during the week at \$1 advance over December and January prices. The market is firmer in every particular and better prices are readily obtained for all grades of Iron. There has been a liberal increase in sales, and the aggregate amount of Iron disposed of last week was largely in excess of the record for any single week since December. A local dealer who sold 500 tons of Mill Iron at \$14.50 during the

recent depression promptly declined an offer for a similar amount on Saturday. Buyers seem ready to anticipate their requirements for the next three months and are buying accordingly.

Old Rails.—The market is dull, with scattering sales of Old Americans reported at \$21 @ \$21.25.

Birmingham.

Office of *The Iron Age*,
Twenty-first street and Second avenue,
BIRMINGHAM, March 4, 1889.

There is no notable change in the Iron market here. There has not been much selling lately. Furnaces are now piling up stock in the belief and confident expectation of better prices. Nothing of consequence has been sold for the last two weeks in the district. No. 2 Foundry may be quoted at \$12.25 at the furnace. Operations have gone on smoothly since the last report. There has been no break in a steady increase of the output of new material mined or manufactured in the district. The financial situation continues hopeful. There has been a considerable disposition among capitalists operating hereabouts to get hold of choice parcels of mineral property, and much money has recently changed hands in this respect. While recognizing the great resources in Coal, Iron Ore and Limestone which this district possesses, the builders of furnaces until only recently have been somewhat cramped for raw material. Many of them have gone ahead and built furnaces without being assuredly provided with Ore, fuel or fluxing material. The furnaces about Birmingham, however, are just now well up to living business methods, and there is no doubt they are on a solid, healthful basis, which is bound to be productive of general good results. Foundries and machine shops still keep busy. Disposition of rolling mill products is slow, with nothing distinctly promising, although there is a sympathetic hope with Pig-Iron makers of better prices. Much is looked for in the near future from careful experiments with Alabama Ores for Steel-making, and those who have most concerned themselves in the development appear sanguine.

St. Louis.

OFFICE OF *The Iron Age*, 212 N. Sixth st.,
ST. LOUIS, March 4, 1889.

Pig Iron.—There is some slight improvement noticeable in the general tone of the market. During the past week a number of sales of Gray Forge were made, from 500 to 1500 tons, at about prices as quoted herewith, and in some cases a trifle more was paid. Furnaces seem determined to maintain prices, and are refusing to sell at the low figures that have been prevailing for some time. They have confidence in the market and are disposed to look for higher prices when the orders already booked are filled, and are refusing orders for delivery during the year, even at slightly advanced figures. Prices can therefore be quoted steady to firm at about as follows for cash, f. o. b. St. Louis:

Southern Coke, No. 1 Foundry, \$15.25 @	\$15.75
Southern Coke, No. 2 Foundry, 15.00 @	15.25
Southern Coke, No. 3 Foundry, 14.25 @	14.75
Gray Forge.....	13.50 @ 13.75
Ohio Softeners.....	17.50 @ 20.00
Lake Superior Charcoal.....	21.00 @ 21.50

Missouri.	
Charcoal Foundry, No. 1.....	16.00 @ 16.50
Charcoal Foundry, No. 2.....	15.00 @ 15.50

Tennessee.	
Charcoal Foundry, No. 1.....	17.50 @ 18.50
Charcoal Foundry, No. 2.....	16.75 @ 17.50
Connellsville Coke, f. o. b. East St. Louis,	\$4.70; St. Louis, \$4.85.

Bar Iron.—There is no change in this department except the lowering of store

price from \$1.90 to \$1.80, which went into effect on the 1st inst. Business continues in the same channel as last reported, and sales are generally for small lots for quick delivery at from \$1.75 to \$1.85, according to quality, &c.

Barb Wire.—There is nothing of interest to report in this connection. Business keeps up fairly well, and some of the mills are well filled with orders. Others, however, show no disposition to "drum up" trade, and are filling what orders they receive, but looking for nothing outside, as they claim they are now selling at cost and prefer to wait until the market shows some signs of strength before taking orders for spring delivery. It is difficult to give a correct quotation, as each manufacturer makes his own price, in some cases higher, in others lower, than those quoted below: For carload lots Two and Four Point Painted, \$2.90; carload lots Two and Four Point Galvanized, \$3.50, f.o.b. St. Louis; less than carload lots, 5¢ additional.

A. P. De Camp & Co., Laclede Building, St. Louis, Mo., are exclusive agents in that district for Midland Missouri Charcoal Iron, also for Natural Lake Superior Charcoal, and Dexter and Struthers' brands of Ohio Scotch and Blackband Irons.

Chicago.

Office of *The Iron Age*, 95 and 97 Washington street, CHICAGO, March 4, 1889.

Pig Iron.—A considerable quantity of Iron was sold in this market during the past week, but the volume of business was by no means as large as that of a fortnight since. Other deals are pending, and it looks as though much more Iron would be absorbed by consumers before the absolute dullness sets in, which is being freely predicted as a result of the very great activity in February. Ohio and Southern Irons have been purchased most freely of late, as consumers had pretty generally covered their requirements for Strong Irons. Prices still rule very low, as notwithstanding the withdrawal of numerous sellers from the market, and the advance of 25¢ @ 50¢ per ton by others, a remnant is left willing to sell at the old figures. No. 2 Soft Southern has been placed at \$14.25, cash, and it is reported that No. 1 Foundry is not held with equal firmness by all parties. No. 3 Strong Foundry is quoted at full prices by Northern furnace companies, the demand for this grade having been unusually heavy in consequence of the change in progress in foundry practice. The demand for Lake Superior Charcoal is ordinarily very light at this time, but quite a number of buyers are figuring, and it is thought that the requirements of the Agricultural Implement manufacturers will bring them into the market earlier than usual, as they are running their works now to their full capacity. Prices are not so firm as they have been, owing to an accumulation of Nos. 1 and 2 at numerous furnaces, and concessions are being made on desirable orders. Cash quotations are as follows, f.o.b. Chicago: Lake Superior Coke, No. 1, \$16 @ \$16.50; No. 2, \$15 @ \$15.50; No. 3, \$14.50; Chicago Scotch, No. 1, \$17.50; Lake Superior Charcoal, Nos. 1 and 2, \$19.50; Nos. 3 to 6, \$20; American Scotch (Blackband), No. 1, \$18 @ \$19; Jackson County Silvery, No. 1, \$18; other Ohio Soft Irons, No. 1, \$17.25 @ \$17.50; Southern Coke, No. 1 Foundry, \$16 @ \$16.50; No. 2 Foundry and No. 1 Soft, \$15.50 @ \$16; No. 3 Foundry, \$15 @ \$15.50; Gray Forge and No. 2 Soft, \$14.25 @ \$14.75.

Bar Iron.—No improvement is to be noted either in demand or price. Mill lots of Good Common Iron are still quoted at

1.62½¢ @ 1.65¢, half extras, f.o.b., Chicago, but consumers insist that they are being offered better figures by salesmen for mills of good reputation. Store prices range from 1.80¢ to 2¢, according to quantity and quality.

Structural Iron.—So far this year manufacturers and dealers are doing most of their trading in prospects. There is a pleasing outlook, but very little immediate business. In view of the expected trade stocks are being replenished and "deals" fixed up. We quote as follows for mill lots, f.o.b. Chicago: Beams and Channels, 2.90¢; Angles, 2.10¢ @ 2.15¢; Tees, 2.55¢; Universal and Sheared Plates, 2.15¢ @ 2.20¢. Small lots from stock sell as follows: Beams and Channels, 3.40¢; Angles, 2.35¢; Tees, 2.75¢.

Plates, Tubes, &c.—The business transacted during the past week was fairly satisfactory. While not many mill lots were sold, one order was taken which covered some 200 tons of Plates. The quantity of business in sight promises a very active trade for the spring months in this line. Boiler Tubes are still quoted at old figures, and dealers are advising their customers to purchase a supply while they can be had so cheaply. Store quotations on small lots are as follows: Sheet Iron, Nos. 10 to 14, 2.50¢ @ 2.60¢; Sheet Steel, 2.75¢; Shell Iron, 3¢; Shell Steel, 3.12½¢; Flange Iron, 4¢; Flange Steel, 3.50¢; Fire-Box Steel, 4.75¢ @ 5.75¢; Boiler Rivets, 4¢ @ 4.25¢; Ulster Iron, 3.75¢; Boiler Tubes, 62½¢ @ 65¢ off.

Sheet Iron.—The demand is very light, and No. 27 Common Black now sells at 3.10¢ @ 3.20¢ in a jobbing way. The manufacturers of Galvanized Iron have made an advance of 2½¢ on deliveries to May 1, but jobbers still quote small lots of Juniata at 65¢ off and Charcoal at 65¢ and 2½¢ off.

Merchant Steel.—The demand is limited at present. The consumers of Spring Steel seem to be well supplied, and other heavy purchasers do not expect to be in the market any earlier than usual this year. Quotations are as follows, according to quantity: Soft Steel, 2.10¢ @ 2.30¢; Tool Steel, 7.75¢ @ 8¢; Specials, 13¢ @ 25¢; Crucible Spring, 3.75¢; Open-Hearth Spring, 2.20¢ @ 2.50¢; Open-Hearth Machinery, 2.30¢ @ 2.50¢; Tire, 2.20¢ @ 2.50¢; Sheet, 7¢ @ 10¢.

Steel Rails.—Manufacturers report a continued dull market, with no immediate prospect of a resumption of activity. They have not changed their quotations of \$30 @ \$30.50, according to quantity.

Old Iron Rails.—Buyers from other sections have appeared in this market and have stiffened prices, although it is understood that the purchases made only covered a couple of thousand tons. For these they paid \$21, Chicago, but it is doubtful if more could be had at that figure just now, as holders are disposed to wait for higher prices.

Scrap Irons.—There is very little demand for any grade of Scrap, and small dealers are selling their stock at \$1 @ \$2 below regular quotations whenever they get an accumulation. Some inquiries are made for Mill Scrap at prices considerably below what holders are asking. Dealers quote for Mixed Country Scrap \$14. Quotations to consumers are as follows, per ton of 2000 lb: No. 1 Railroad Shop, \$20; Fish Plates, \$21; Mixed Track, \$18 @ \$19; No. 1 Mill, \$14 @ \$16; Pipes and Tubes, \$13 @ \$14; No. 2 Mill, \$9.50; Axles, \$25; Horseshoes, \$18 @ \$19; Machinery Cast, \$13.50 @ \$14; Stove Plate, \$11; Cast Borings, \$8.50; Wrought Turnings, \$11 @ \$12; Axle Turnings, \$13.50; Mixed Steel, \$11; Coil and Leaf Steel, \$15; Tires, \$15.

General Hardware.—The demand for Shelf Hardware has been better the past week, appearing to fluctuate with the weather, which has been more spring-like. February was comparatively dull, but it is not expected that March will follow suit, as in many sections a great deal of outdoor work will be prosecuted which will call for a heavy consumption of Hardware. House-Furnishing Goods are in fair demand, as well as Tools, Steel Goods and Staples generally. A new Screw list has been issued, which differs from the old one in naming lower prices and a less discount, but which, however, is understood to make an average advance over the former net prices of about 7½%. In Hardware generally the tendency seems to be upward, while in staple goods it is precisely the reverse. The jobbers of Heavy Hardware complain of decided dullness in their branch of trade, which should at this time be experiencing a fair degree of activity.

Nails.—Steel Nails are still selling at \$2 @ \$2.05 in small lots, and \$1.95 for carloads. The manufacturers are the only ones in the Nail trade maintaining a firm front. They are being undersold by the jobbers, who have long time contracts for stock at low figures, enabling them to control this market effectually. Nevertheless, it is expected that at the next meeting of the Nail Association a further advance of 5¢ in the factory price will be declared. Wire Nails are now being sold at \$2.40 for small lots and \$2.35 for carloads. The manufacturers are not quite so demoralized as they were, but they have as yet effected no understanding with one another, although something of the kind is regarded as very probable.

Barb Wire.—This branch of trade is in about the same condition as the Nail trade. Jobbers are selling small lots of Painted at \$2.65 @ \$2.80, and carloads at 5¢ @ 10¢ per 100 lb less. Galvanized maintains its advance of 60¢ per 100 lb on Painted. At present there seems to be no prospect of an advance.

Pig Lead.—Dealers report a very quiet week, consumers buying only to cover their immediate wants, and their views of the future being colored to some extent by the large stocks still held. At the beginning of the week \$3.60 was asked, but with sales of less than 200 tons prices weakened to \$3.55 and to \$3.50.

Cincinnati.

Office of *The Iron Age*, Fourth and Main Sts., CINCINNATI, March 4, 1889.

Pig Iron.—The local market has been somewhat irregular during the week, but has given further evidence of improvement. Yet the recovery is so gradual that it fails to impart general confidence. There has been more inquiry, and, in exceptional instances, a few transactions of moment have been made. An advance of 25¢ @ 50¢ per ton has been realized on the prices current during the period of the recent depression, but there are still instances of sales almost, if not quite, as low as those current a few weeks ago. Furnaces, especially in the South, are well sold ahead on Foundry grades, and are refusing to make further large contracts for future delivery, except at an advance, which buyers are not yet ready to pay. Shipments from furnaces during the week have been large, in some instances unprecedented, but production is active and buyers point to the fact that there was a large increase in stocks in January, with the probability of a further increase, although smaller in February; the present month has not progressed far enough to indicate its tendency, and there are views both for and against an increase in stocks. Southern advices lead

to a belief of a reduction rather than otherwise, while it is claimed Northern stocks will show an increase. Among the sales made during the week is reported one lot of mixed Forge grades of 11,000 tons; Gray Forge selling at \$13; Close Bright at \$13.25; Open Bright at \$14.50; Silvery at \$13 @ \$13.25 and Mottled at \$12.50. There were also reported sales of Gray Forge at \$12.75; 1500 tons do. at \$13.25 and 1000 tons do. at \$13.50; 500 tons No. 1 Southern Foundry at \$15, all cash. Car-Wheel Iron has been quiet. Mottled Iron has sold as low as \$12, spot. The following are the approximate prices current here at the close for cash, f.o.b.:

Foundry.

Southern Coke, No. 1 (new classification).....	\$15.00 @ \$15.50
Southern Coke, No. 2 (new classification).....	14.50 @ 14.75
Southern Coke, No. 3 (new classification).....	14.00 @ 14.25
Ohio Soft Stone Coal, No. 1.....	15.00 @ 16.00
Ohio Soft Stone Coal, No. 2.....	14.50 @ 15.00
Mahoning and Shenango Valley.....	16.50 @ 17.00
Hanging Rock Charcoal, No. 1.....	21.00 @ 22.00
Hanging Rock Charcoal, No. 2.....	19.00 @ 20.00
Tennessee and Alabama Charcoal, No. 1.....	18.00 @ 18.50
Tennessee and Alabama Charcoal, No. 2.....	17.00 @ 18.00

Forge.

Strong Neutral Coke.....	13.00 @ 13.50
Mottled Neutral Coke.....	12.00 @ 12.50
Gray Forge.....	13.00 @ 13.25

Car-Wheel and Malleable Irons.

Southern Car-Wheel.....	20.00 @ 25.00
Hanging Rock, Cold Blast.....	22.00 @ 25.00
Lake Superior Car-Wheel and Malleable.....	21.00 @ 22.00

Manufactured Iron.—The market has remained quiet, but steady, for all kinds.

Nails.—The market has remained moderately active, and a firmer tone has prevailed, with Steel Nails especially firm and in better demand. 12d @ 40d sell at \$1.95 @ \$2 $\frac{1}{2}$ keg, with 10¢ rebate in carload lots at the mills. Steel Nails sell at \$1.90 @ \$2, and Steel Wire Nails at \$2.55 @ \$2.60 $\frac{1}{2}$ keg.

Old Material.—There has been a moderate demand and a steady market for Old Wheels, which sell at \$18 @ \$18.50. Old Rails have ruled easier, with moderate sales at \$21.50, cash.

Chattanooga.

Office of *The Iron Age*, Carter and 9th Sts., CHATTANOOGA, March 4, 1889.

Pig Iron.—There is a better feeling all along the line as to the condition of this market. Prices at which sales were made a few weeks ago are not entertained now, but an advance of 25¢ @ 75¢ $\frac{1}{2}$ ton is being asked, with many sales at this advance, and there is still a disposition manifested to still advance the prices under the influences of the many inquiries that are being made. The movements of good brands of both Foundry and Forge are by no means sluggish, and there is scarcely a furnace in the Southern districts that has any accumulation of this kind of stock on their yards. The policy of many of the stacks has been heretofore to sell large blocks for future deliveries. Such sales, of course, keep the yards well cleaned up, but those of the furnaces that have not entered into such transactions made sales not in such large lots, but more frequent in number, and, as a general thing, they are realizing a rather better price. While there have been some sales at low figures, yet it must be borne in mind that there is a considerable difference in the quality of Iron that is being turned out by the Southern stacks, and No. 1 Foundry of one furnace is steadily bringing at least \$1 $\frac{1}{2}$ ton more than the No. 1 of another. An Iron that has always had a good reputation among consumers cannot be had now at less than \$13.75 @ \$14, at the yard, and these figures can be taken as a basis of the present condition of the market.

Miscellaneous.—There appears to be no falling off in the disposition of moneyed

men to make investments in Southern enterprises. Within the past year there has been 23 large sawmills put up on the line of the Georgia Southern Railroad, a new road recently built from Macon south. There are now in course of erection on the same line of road about 25 more, all of which will be completed during the present year. Much of this, of course, is not being done with local capital, but there seems just now to be a greater disposition than ever for a few Eastern and Northern men to combine, throwing into a pool several hundred thousand dollars, and settle on one of the many Southern points that are yet available and force such places into importance by the use of money and the many advantages that nature has placed at their disposal. The effect of these transactions is already being felt through the entire South, and there are those who predict that the time is near at hand when the whole South will take upon herself a much greater boom than any that has occurred in the past.

Louisville.

LOUISVILLE, KY., March 4, 1889.

Pig Iron.—The market has been quiet during the past week, with not much Iron offering. Buyers elsewhere are paying about 50¢ a ton over the lowest prices at which Iron, so far, has been offered. It is thought that a slight reaction has taken place, and furnaces can look forward to a somewhat stronger market. We quote as follows:

Southern Coke, No. 1 Foundry, new classification.....	\$14.75 @ \$15.25
Southern Coke, No. 2 Foundry, new classification.....	14.25 @ 14.75
Southern Coke, No. 3 Foundry, new classification.....	13.75 @ 14.25
Gray Forge.....	13.25 @ 13.75
White and Mottled, different grades.....	12.75 @ 13.25
Silver Gray, different grades.....	13.00 @ 13.50
Southern Charcoal, No. 1 Foundry.....	16.25 @ 16.75
No. 1 Mill.....	14.75 @ 15.25
Southern Car-Wheel, standard brands.....	21.75 @ 22.75
Southern Car-Wheel, other brands.....	18.00 @ 19.50
Hanging Rock Coke, No. 1 Foundry.....	15.50 @ 16.00
Hanging Rock Charcoal, No. 1 Foundry.....	19.50 @ 21.00
Hanging Rock, Cold Blast.....	20.75 @ 23.75

New York.

Office of *The Iron Age*, 66 and 68 Duane street, NEW YORK, March 6, 1889.

American Pig.—The consensus of opinion is that, while there is no notable increase in buying, the market shows a slightly better tone. The improvement is largely negative—that is to say, there is not as much pressure to sell by weak holders, and bargains are not so liberally hawked about. Reports from consumers are still conflicting. Until many of them see enough ahead in the way of work, they are not likely to become liberal buyers. We continue to quote for standard brands Northern Iron No. 1, \$17.75 @ \$18; No. 2, \$16.50 @ \$17, and Gray Forge, \$15 @ \$16, all at tidewater.

Scotch Pig.—In spite of higher prices abroad, the market has not moved here to any appreciable extent. We quote: Coltness, \$20.50 @ \$21; Shotts, \$20 @ \$20.50; Langloan, \$20 @ \$20.25; Summerlee, \$20.25 @ \$20.50 and Dalmington, \$19.25 @ \$19.50.

Structural Iron.—We quote Sheared Plates, 1.9¢ @ 2¢; Universal Mill Plates, 2¢ @ 2.1¢; Angles, 1.9¢ @ 2.10¢; Tees, 2.4¢ @ 2.6¢, and Channels and Beams, 2.8¢ on dock for all sizes. Sales of Beams are reported at 2.7¢ at Boston. The Brooklyn elevated extension work was taken by an Eastern Pennsylvania mill.

Plates.—We quote Iron Tank, 2¢ @ 2.2¢; Shell, 2.25¢ @ 2.4¢; Steel Tank and Ship Plate, 2.1¢ @ 2.25¢; Shell, 2.35¢ @ 2.5¢; Flange, 2.6¢ @ 2.75¢, and Fire-box, 3¢ @ 4¢.

Bar Iron.—We quote: Carload lots on dock, half extras, Common, 1.65¢ @ 1.7¢; Medium, 1.7¢ @ 1.75¢, and Re-fired, 1.75¢ @ 2¢.

Steel Rails.—No sales of any consequence are reported this week. There are a number of inquiries in the market, one of the Eastern Steel companies estimating that the business in sight aggregates 75,000 tons at least. In the West the situation remains unsatisfactory. Outside of a lot of 8000 to 10,000 tons for delivery at Duluth or St. Paul, for a new road in the Rocky Mountains, there is no business of any consequence pending. As indicating how little the roads in the territory tributary to the Western mills are buying, we may note that a transcontinental road, asking for bids on about 2000 tons, delivery Omaha. Under ordinary conditions, such a road would require many times the amount. The Board of Control holds a meeting to-day at Philadelphia to arrange for an increase in the allotment. We quote \$27 @ \$27.50 nominally. There is a large order in the market for 30-pound Rails.

Nail Slabs.—Some purchases have been made at \$28 at mill, and the tone is steadier.

Wire Rods.—No business is reported. We quote nominally \$41.50 @ \$43 for Foreign.

Old Rails.—The market is very dull. Stocks are low. We quote nominally \$23 @ \$23.50 for Tees.

Galvanized Sheets.—At a meeting in Philadelphia the discount has been advanced to 65 % and 5 % for large lines.

A. T. Shoemaker, Duncan Building, 11 Pine street, has been appointed representative of the North Chicago Rolling Mill Company, the Juliet Steel Company, and the Union Steel Company, for the sale of Steel Rails, &c.

Metal Market.

Copper.—When we reported last week spot Chili Bars, Good Merchantable, were still quoted in London, £78. Since then quite a drop has occurred to £69 yesterday, while futures at the same time gave way from £66 to £60, sales aggregating 500 tons. The panic into which London has been thrown arises from the impression that the syndicate has got into severe financial straits. The monthly statement of visible supply of Copper in England and France showed an increase of 9000 tons, while the deliveries were confined to 1400 tons. These statistics were well calculated to aggravate the situation and precipitate a decline, causing the bears in London to offer futures at £52 for the balance of the year. Here the market was so thoroughly demoralized that for a couple of days nothing was done, until yesterday, when 25,000 lb March were sold at 15½¢. Casting brands have sold at 15¢ here, 15.30¢ at Chicago and below 15¢ at Philadelphia, where a local fight is going on between three refiners. The sudden death of M. Denfert-Rochereau, of the Comptoir d'Escompte, at Paris yesterday, caused a panic in Copper shares on the Exchange there. The following is the dispatch as received by the Associated Press, dated yesterday: "Wild fluctuations marked Metal shares from noon until the close. Société des Métaux shares fell to 188, and when the panic abated they closed at 192. Rio Tinto touched 382 and closed at 397. Comptoir d'Escompte ranged between 800 and 860, the final quotation being 810. Stocks beyond the sphere of copper speculation remained unshaken. Rentes were irregular, but 3 % closed only 10¢ lower for the day. To-

morrow, it is understood, will be big with fate for the Copper syndicate, the negotiations for an arrangement with all the mines, including American, finally succeeding or failing. Société de Métaux shares were quoted on Saturday at 280 francs. It is reported that the Chamber of Deputies will discuss the question of the workings of the French syndicate which has secured control of the Copper market." The latest special spot quotation from London is £64. 10/, with no quotation for futures. Our market is paralyzed and altogether nominal, pending further developments in Europe and here. It stopped buying last Thursday, and there was a very sharp decline, not only in its own shares and in those of the mining companies, but also in the leading Paris bank, which is identified with the speculation. In Boston there was a similar fall in shares, so that on Monday the impression was widespread that the end was near. The latest advices, however, show that Boston has recovered somewhat, and that the feeling in Paris, too, is stronger, Société shares rallying to 240 francs. This is probably due to the very important meeting held in this city yesterday between a representative of the Rothschild's, the agents of the syndicate and the American mining companies, including the Anaconda, Calumet and Hecla, Tamarack, Boston, Montana, Atlantic, Central, Quincy and the Arizona companies. It is reported that the meeting was very harmonious, and that all present agreed to a restriction of output, subject to confirmation by the respective boards of directors. The exact percentage is not known as yet. It is variously reported at 15 and 25 %. For the present the price has been left untouched, but it seems certain that there must be some readjustment. The initiative in this latest move appears to have, therefore, been taken by the American companies. The foreign, notably the Spanish, mines must follow, and that very quickly. The mines have as great an interest in the fate of the syndicate as those connected with it, and there are very powerful financiers who cannot afford to let it fail, without having exhausted every means at their disposal. A reduction in the price here is, however, almost as imperative as a reduction of the output. The Spanish export figures for last year are now published, showing that there were shipped 825,045 tons of Pyrites, against 766,801 in 1887, and 671,897 in 1886; and of precipitate 29,105 tons, against 29,890 and 27,003.

Tin—Has been comparatively little affected by the tumble in Copper, declining from £95. 10/ a week ago to £95 for spot and futures from £96. 5/ to £95. 15/ in the London market, sales running up 900 tons. Considering that the monthly statistics exhibited an increase in the visible supply in Europe and America of 1700 tons, it must be confessed that the Metal has, under the circumstances, stood its ground remarkably well. The market here at first ranged between 21.45¢ and 21.75¢ on the spot, 21.40¢ and 21.65¢ March, and 21.40¢ @ 21.50¢ for April, leading at the close to sales of 30 tons spot from 21.60¢ to 21.50¢, closing at 21.55¢ yesterday, while 20 tons March were sold from 21.45¢ down to 21.35¢. During February, as per cable from Gillfillan, Wood & Co. to Mr. Chas. Nordhaus, New York, there were shipped from the Straits Settlements to the United States 800 tons, against 250 last year, and to England, 2750, against 2500; total shipment, since January 1 to America, summing up 1850 tons, as compared with 650 same time last year, and 3950, against 6000 to England. Spot Tin declined in London this morning from £95 to £94. 17/6,

futures remaining unaltered. **Tin Plates** have been dull and featureless in this city during the week, while continuing to be well held in England. Futures are held higher in this market, but consumers do not feel disposed to take hold of them as long as a general cloud overhangs the Metal market. We quote at the close, large lines, per box: Siemens-Martin Steel, Charcoal Finish, \$4.75 @ \$5.50; Terns \$4.12 @ \$4.25; Coke Tins, \$4.22½ @ \$4.30, and Wasters \$4.12½ @ \$4.15. The quotation in Liverpool is 13/ for Coke Tin. As per Board of Trade returns the January export from England amounted to 37,678 tons, against 26,197 in 1888 and 20,310 in 1887; out of these amounts the United States received 28,471, 21,372 and 14,485, respectively, the price of Coke Tins averaging in January 13/, against 14/7 in 1888, and 13/ in 1887.

Lead—Has been devoid of features and quite inactive in our market, some 400 tons being taken in lots at 3.65¢ @ 3.75¢, the closing figure being 3.70¢. At the West, the quotation remains 3.45¢. London has kept steady at £12. 17/6 for Soft Spanish, while English Pig has improved to £13. 2/6 Spain exported last year 129,160 tons of Pig Lead, against 130,797 in 1887, and 114,471 tons in 1886.

Spelter—The domestic article has been more freely offered and cannot be quoted now over 4½¢, while Silesian remains little sought after at 5½¢. Spanish exportation of Calamine amounted last year to 26,098 tons, as compared with 22,841 in 1887, and 26,624 in 1886. London remains steady at £17. 10/.

Antimony—The demand has continued on a moderate scale and at well-sustained figures, being 13¼¢ for Cookson, and 12¢ for Hallett.

New York Metal Exchange.

The following sales are reported:

FRIDAY, March 1.	
10 tons Tin, April	21.40¢
MONDAY, March 4.	
10 tons Tin, spot	21.00¢
10 tons Tin, March	21.45¢
TUESDAY, March 5.	
10 tons Tin, spot	21.40¢
50 tons Lead, March	3.72½¢
10 tons Tin, spot	21.50¢
10 tons Tin, March	21.35¢
25,000 pounds Lake Copper, March	15.75¢
WEDNESDAY, March 6.	
20 tons Tin, March	21.30¢

Coal Market.

The Anthracite Coal trade is dull and despondent, the advent of March bringing with it a promise of milder weather, while as yet the winter's accumulations are a standing menace to firmness in prices. At Port Richmond alone there is in stock no less than 220,000 tons. The Coal managers are conferring in reference to opening prices for the new year, and an announcement from the sales agents touching this point will be looked for not later than the 15th inst. Production for the week ending March 2 has fallen to 477,553 tons, a decrease of 27,600 tons compared with the previous week, and 229,000 tons compared with the same week in 1888. Since January 1 the total is 4,793,510 tons, a decrease of 887,338 tons compared with last year. Selling prices by individuals average about 50¢ per ton below the regular schedule, and in other directions sales are reported at a concession. Quotations are: Hard White Ash, Lump, \$4.50; Broken, \$4.15; Egg, \$4.40; Stove, \$4.65; Chestnut, \$4.55; Free-Burning, f.o.b., Broken, \$3.95; Egg, \$4.30; Stove and Chestnut, \$4.65; Pea, \$2.75.

Bituminous Coal prices are irregular on a narrow margin of profit, and the market is dull. Rates to lake ports are unchanged.

Harbor and Eastern freights are on the lowest basis. George E. Barnett has associated himself with the old house of Percy Heilner & Son, No. 1 Broadway, for the handling in this market of the White Ash and Red Ash Coals of the Philadelphia and Reading Coal and Iron Company, direct from the mines. The argument in the case of Cox & Co. vs. the Lehigh Valley Railroad Company, before the Interstate Commission, has been postponed until March 14.

The annual report of the Lehigh and Wilkesbarre Coal Company shows that the receipts for Coal last year were \$9,563,866, and the net earnings \$1,986,521. The total Coal tonnage was 2,694,932 tons.

The Poughkeepsie Bridge Company and the railroad lines that connect are considering the plan of introducing the Dodge storage system at some point east of the bridge, where stocks can be accumulated during the summer and fall for winter distribution throughout New England. Cumberland shipments for the week were 56,600 tons; Clearfield, 61,500; Rochester, 36,888; Beech Creek, 24,880.

Financial.

Events transpiring at Washington as yet have no perceptible effect either in the Wall street markets or in business circles generally. The absence in the President's Inaugural Message of any allusion to Treasury management or questions of finance or currency would indicate on his part no sense of disquietude or anxiety with reference to the future, and it remains to be seen that the selection of Secretary Windom to represent the Treasury was not the wisest that could have been made. The President approved the Interstate Commerce act, which was finally passed substantially as prepared by the Senate Committee on Interstate Commerce. One change made is the requiring of three days' notice of any proposed reduction in the published rates of a railroad. Special provision is made to prevent and punish "underbidding" or discrimination. The provisions of the act in regard to the publication of rates are made to apply to joint through rates. Other amendments are intended to complete the power conferred upon the Commissioners, with the special purpose of enforcing the penalties imposed for violation of the law. The proposed amendments relative to the jurisdiction of State's courts and transportation of oil in barrels or tanks were rejected. In reference to the "agreement among gentlemen," Judge Cooley has been furnished with evidence against certain of the weaker roads manipulating freight rates out of Chicago, and said when he left for New York last week he thought the prosecution of some roads was certain. The outcome of the matter will be watched with interest, since hitherto aggressive action has too often provoked retaliation.

The Stock Exchange markets, pending a change of Administration at Washington, were devoid of feature, transactions being confined almost wholly to professional traders. The feeling prevailed in regard to the future that much depended on the success of the endeavors to secure the services of Interstate Commissioner Walker as chairman of the Interstate Railway Association. The market was unaffected by President Harrison's inaugural. The tone of the market was generally strong. On Tuesday the tone was generally strong to near the close, when it became irregular and lower. Manhattan was unfavorably influenced by the declaration of a 1½ % scrip dividend, convertible into new 4 % bonds. The report of the failure of the Reading Iron Company caused something of a flutter. It was understood that a reorganization would fol-

low, the creditors funding their indebtedness, but no statement has been made.

Government bonds are quoted as follows:

U. S. 4s, 1891, registered.....	107 3/4
U. S. 4s, 1891, coupon.....	107 3/4
U. S. 4s, 1907, registered.....	127 3/4
U. S. 4s, 1907, coupon.....	128 3/4
U. S. currency 6s.....	120

The general business situation is not altogether satisfactory, although the spring demands for various classes of merchandise are assuming larger proportions, and a fair distributive movement is in progress. With dry-goods jobbers prices on all desirable goods are steady, and a better feeling is noted, but accounts respecting trade at interior points are not uniformly good. Wholesale grocers report prices firm, with coffee and sugar tending upward. On the Produce Exchange spot wheat is depressed and spot corn very slow. Cotton is steady on a moderate demand. Provisions are higher all around, with good buying by English houses. Exports from Atlantic ports of bacon and pork are larger than for the corresponding week last year. The total east-bound tonnage from Chicago last week was 65,345 tons, against 68,651 the week before, and 58,129 for the same week last year.

The total clearings of 40 cities last week show an increase of 16%, compared with the same week last year. For the month of February there was a gain of 11.4%, compared with the same month in 1888. New York gained 17.2%; Boston, 8.3%; Philadelphia, 16.8%; Chicago, 7.9%; New Orleans, 19.9%; Kansas City, 25.1%.

The weekly statement of the associated banks was unfavorable, showing a loss of \$3,469,600 in surplus reserve, which is now \$12,270,550, against \$12,744,700 one year ago and \$9,088,000 at the corresponding date in 1887. Loans were increased \$4,045,000; specie decreased \$3,756,400, showing the effect of Treasury absorptions and shipments to other points, the requirements for Boston being unusual; deposits increased \$204,400. Money was in better demand, attended with firmer sales. Lenders were disposed to await official announcements serving to disclose the future policy of the Government respecting bond purchases. The supply of commercial paper is better, but not equal to the demand. Endorsed bills receivable are quoted at 4%, 60 @ 90 days; longer dates 4 1/2 @ 5%. Mercantile houses are expected to put out their usual lines of paper as the season advances. Banks are discounting little, except for customers. The market for sterling is very dull, there being practically no bills, grain, provision, cotton or security offering.

The official statement of foreign commerce for January, issued by the Bureau of Statistics, discloses the fact that during the first month of the new year merchandise exports and imports each exceeded in value those of the same month of 1888 by \$10,000,000. The volume of January imports is unprecedented, being \$18,000,000 above the average of the five years preceding. The volume of January exports was greater than for any year since 1885, and \$5,000,000 above the average for the five years preceding. The value of exports for the month was \$73,470,000, and of imports \$68,348,000. For the seven months of the fiscal year exports have aggregated \$454,204,000, compared with \$447,961,000 for the same period of last year. Imports have amounted to \$420,932,000, compared with \$409,851,000 for the same seven months of the preceding fiscal year.

The new Union Square Bank in this city opened for business on Monday with \$200,000 deposits. The United States Savings Bank of the City of New York, organized to do business in the Nineteenth Ward, has been incorporated. Ex-

Secretary Fairchild becomes the head of the newly-organized New York Security and Trust Company. Announcement is made that enough subscriptions have been offered to absorb four times the capital stock. The public debt statement for February shows an apparent increase in the debt of \$6,443,344. This is owing to unusually heavy expenditures for pensions and premiums. The receipts for the fiscal year thus far are about \$1,000,000 more than for the same period last year, while the expenditures are \$39,000,000 more. The surplus is \$48,096,158—a decrease of nearly \$17,000,000.

Exports for the week are \$6,754,600, and include 581,000 bushels of corn, 137,000 bushels of wheat, and 28,000 bales of cotton. Since January 1 the excess is \$7,500,000, compared with last year.

Imports.

Hardware, Machinery, &c.

Boker, Hermann & Co., Mdse., cs., 52; Arms, cs., 43; Anvils, 10
Clark, G. A. & Bro., Mach'y, cs., 316
Curley J. & Bro., Mdse., cs. 1
Folsom Arms Co., H. & D., Arms, cs., 8
Foley, Edw., Mach'y, pgs., 12
Field, Alfred & Co., Mdse., cs., 49
Graef Cutlery Company, Cutlery, cs., 6; Hdw., cs., 13
Hammacher, Schlemmer & Co., Nails, cs., 19
Hartly & Graham, Mdse., cs., 9
Johnson Foundry Company, Iron Pots, 4
Kastor, Ad. Mdse., cs., 10
Lau, J. H. & Co., Arms, cs., 6
Merch. Despatch Company, Mach'y, cs. 8
Ogden, H. C., Hdw., cs., 2
Outerbridge, A. E. & Co., Hdw., pkg., 1
Pim, Forwood & Co., Dutch Stoves, 84
Schoverling, A., Arms, cs., 17
Schoverling, Daly & Gales, Arms, cs., 18
Sanderson & Son., Mach'y, pgs., 25
Taylor, Thomas, Mdse., cs., 7
Thebaud Bros., Mach'y, pgs., 1570
Order, Brass Goods, cks., 8; Mach'y, pgs. 58;
Crank-Pins, 15

British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, March 6, 1889.

The Copper market has continued unsettled and depressed. The syndicate agents have refused to purchase Merchant Bars for prompt delivery and it is stated that they have abstained from buying forwards since January. The further statement is made that they have refused this week to take cash warrants. On Monday prices fell £8, owing to the decline in the shares of the Société des Métaux, and by this decline, it is believed, the credit companies connected with Société suffered most. At this center the outlook is considered more serious than ever before, the immense stock held by the syndicate, which was at high prices, it is said, causing fresh outlay of money and necessitating further borrowing. According to statistics published this week, the consumption in 1888 was 7 1/2% less than in the preceding year.

Copper Furnace material has depreciated, in partial sympathy with the decline in the prices of Bars. Among late sales is noted 400 tons American Matte at 14/3 per unit, and subsequently 60 tons ditto at 14/, f.o.b. Liverpool.

LATER.—No definite information can be obtained as to the result of the negotiations of the syndicate on new contracts. Opinions are variable, but there is an impression at the close of business that the syndicate will save itself. Their agents are again purchasing. The final transactions were at £64. 10/ for prompts.

The demand for Block Tin for consumption is improving. This fact and

higher quotations from New York, together with reports of a larger business there, causes speculators to operate more freely. The market has also been benefited by advices of probable smaller shipments from the Straits. Prices have suffered a temporary reduction, but the market is again stronger. The Billiton sales realized equal to £97. 10/ in Holland.

Prospects for the formation of the Steel Rail syndicate continue favorable. It is stated that the proposal submitted very recently is well received by all the makers. A committee has been appointed to draw up the plan of the scheme in full on the basis presented. It is believed that the makers in the Cumberland district arranged to have orders for Rails booked by Bolckow, Vaughan at late rates. Prices for rails are hardening and quoted one-third higher. Some advance is also quoted on Blooms and Slabs.

The Tin-Plate trade is somewhat disturbed by labor disputes. The Worcester works (eight mills) have closed, and the Upper Forest works (twelve mills) are likely to follow. There is plenty of inquiry at the present time, but little business, as makers are refusing orders at the prices offered.

The Pig Iron market continues to harden under the influence of increasing home consumption. Speculation is comparatively small. There is some talk of blowing in more furnaces in Scotland. Most brands of makers' Iron are again 6d to 1/ higher this week. Middlesboro' Pig has been sold at 9d rise, and Hematites are a good 6d up, with liberal purchases at the advance. Old Rails and Scrap Iron are without improvement.

Scotch Pig.—There continues to be a large business and prices are strong:

No. 1 Coltness, f.o.b. Glasgow.....	54/6
No. 1 Summerlee, " ".....	54/
No. 1 Gartsherrie, " ".....	51/
No. 1 Langloan, " ".....	51/
No. 1 Cambro, " ".....	45/6
No. 1 Shotts, " at Leith.....	51/
No. 1 Glengarnock, " Ardrossan.....	50/
No. 1 Dalmellington, " ".....	45/6
No. 1 Eglinton, " ".....	44/

Steamer freights, Glasgow to New York, 5/; Liverpool to New York, 10/.

Cleveland Pig.—Trade has been large again, and the market is strong at the advance. No. 1 Middlesboro', G.M.B., 39/; No. 3 ditto, 36/9.

Bessemer Pig.—Demand continues large and prices still show advancing tendency. West Coast brands, mixed numbers, 47/ @ 47/6, f.o.b. shipping point.

Spiegeleisen.—The market remains firm and fairly active. English 20% quoted 80/, f.o.b. N. W. England shipping point.

Steel Rails.—Higher prices generally asked and the demand good. Heavy sections quoted at £4. 6/3, and light sections £4. 12/6 @ £4. 17/6, f.o.b. at N. W. England shipping point.

Steel Blooms.—Only a moderate trade, but prices firmer. We quote £3. 18/9 for 7 x 7, f.o.b. at N. W. England shipping point.

Steel Billets.—The market firm with demand fair. Bessemer, 2 1/2 x 2 1/2 inch, £4. 5/, f.o.b. at N. W. England shipping point.

Steel Slabs.—There is more demand for these and the market is firmer. Bessemer, £3. 18/9, f.o.b. at N. W. England shipping point.

Old Rails.—No improvement in the demand. Prices nominal. Tees quoted

at £3. 5/ @ £3. 6/, and Double Heads, £3. 8/ @ £3. 10/, c.i.f., New York.

Scrap Iron.—Demand continues slow. Heavy Wrought quoted at £2. 2/6 @ £2. 7/6, f.o.b.

Crop Ends.—A moderate business at barely steady prices. Bessemer quoted £2. 7/6 @ £2. 10/, f.o.b.

Tin Plate.—There is a very good demand and sellers are firm. We quote, f.o.b. Liverpool:

1C Charcoal, Allaway grade.....15/9 @ 16/3
1C Bessemer Steel, Coke finish.....13/6 @
1C Siemens.....13/9 @
1C Coke, B. V. grade.....13/ @ 13/3
Charcoal Terne, Dean grade.....12/6 @ 13/

Manufactured Iron.—Trade is of good volume and prices are very steady. We quote, f.o.b. Liverpool:

Staff. Ord. Marked Bars.....£ s. d. @ 8 2 6
Common.....5 12 6 @ 5 15 0
Staff. Bl'k Sheet, singles.....7 12 6 @
Welsh Bars (f.o.b. Wales).....5 0 0 @ 5 2 6

Copper.—Market irregular and unsettled. The quoted prices at the close are: Chili Bars, £64. 10/ for spot; for three months futures, no market. Best Selected, £71 nominal.

Tin.—The market fairly active but somewhat irregular. Straits quoted at £95, spot, and £95. 10/ for three months' futures.

Lead.—The trade rather slow, but prices firmer. Quoted at £12. 17/6 for Soft Spanish.

Spelter.—A moderate business passing at steady prices. Quoted at £17. 12/6 for ordinary Silesian.

Foreign Markets.

EQUIVALENTS.

	Cents.
Franc, Peseta or Lira.....	19.3
Florin (Netherlands).....	40.2
Florin (Austria).....	55.9
Milreis (Portugal).....	41.08
Milreis (Brazil).....	54.8
Mark (Germany).....	23.8
Pounds.....	2.205
Kilogram.....	2.205
Picul.....	134.

CHILE.

VALPARAISO, January 4, 1889.—**Copper.**—Dealings have been restricted by the fact that the mines are under contract all the way to the middle of February, and that consequently they may hold back; hence only 5050 quintals were sold at \$26.40 @ \$27 per quintal, as to brand. The price of \$26.25 equals £73. 19/2 per ton, with 30/ freight to Liverpool. **Coal.**—There being considerable difficulty just now in landing Coal at the Nitrate ports, it is not easy to place the latest cargoes arrived; thus New Castle does not bring over 37/6 per ton, on the spot, while afloat it cannot be had for less than 42/6 @ 45/. **Freights.**—Rates are weak, there now being 60,000 tons of ships' room seeking freight. For Nitrate to England 28/9 @ 30/ have been paid; for the Continent 33/9 @ 35/, and for Guano respectively 34/ and 36/3. **Exchange.**—Drafts on London, 90 days' sight, are bringing 28¼d.—Weber & Co.

EAST INDIES.

SINGAPORE, January 21, 1889.—**Tin.**—Has been in brisk request and well sustained, some 365 tons selling at \$36.87½ @ \$37.25 per picul, and there are buyers still at \$37. **Gum Damar.**—A sale has been effected of 20 piculs Palembang at \$19.50 per picul. **Gum Copal.**—Some 60 piculs have changed hands at \$7.55 @ \$11.05, and for a couple of boxes Gum Benjamin from Penang \$38 per picul has been paid. **India-Rubber.**—Borneo is scarce and wanted, ordinary qualities fetching as much as \$38 @ \$39 per picul. **Gutta-Percha.**—Is offered sparingly, so that good quality sells with the greatest ease at \$125 @ \$135 and medium at \$80 @ \$125. **Exchange.**—Bank drafts, four months' sight, 3/1¼.—Gillfillan, Wood & Co.

MANILA, February 25, 1889.—**Hemp.**—There are buyers at \$16.75 per picul, against \$8.58 a year ago, equaling ½ ton, cost and freight, £56. 12/6, as compared with £30. 12/6 in 1888. The clearances for the United States since last cable amount to 7000 bales, against none last year, and since January 1 to 60,000, against

19,000. There remain loading for the United States 41,000 bales, against 22,000; cleared for England since January 1, 44,000, against 38,000; loading for England, 11,000, against 18,000; cleared for all other ports, 6000, against 7000. Receipts at all ports since last cable, 17,000, against 7000; since January 1, 105,000, against 82,000 bales in 1888 and 68,000 in 1887. **Freight.**—\$7.50, against \$5. **Exchange.** 6 months' sight, 3/8, against 3/8½.—Kerr & Co., per cable direct, to Mr. Charles Nordhaus, New York.

BELGIUM.

BRUSSELS, February 23, 1889.—**Iron.**—The Belgian market remains firm, there being a good demand for finished and several large dealings have taken place among others. The Thy-le-Château Company, among others, made a sale of 17,000 tons Merchant Iron on the spot, and simultaneously received orders for 15,000 tons Beams. In the Castings line export orders are secure, but domestic ones are flocking in all the more actively. Steel is very firm. Cockerill is just executing an order for Havana for Steel Rails, at 111 francs, f.o.b. Our Government stands in need of 15,000 tons Goliath Steel Rails. Following has been the foreign Iron and Steel movement in Belgium in 1888 and 1887:

	1888.	1887.
Tons.	Tons.	Tons.
Iron Ore.....	1,742,867	1,451,806
Ingot Steel.....	1,275	443
Steel Rails.....	249	166
Steel in sheets.....	2,516	2,339
Wrought Steel.....	887	370
Pig Iron.....	212,814	141,462
Scrap Iron.....	25,211	17,831
Iron Wire.....	3,495	3,923
Iron Rails.....	559	81
Sheet Iron.....	1,341	866
Other Iron.....	8,112	5,383
Nails.....	551	559
Wrought Iron.....	3,860	3,348
Castings.....	933	1,116

—Export—

	1888.	1887.
Tons.	Tons.	Tons.
Iron Ore.....	148,491	176,530
Ingot Steel.....	5,369	8,602
Steel Rails.....	62,661	48,910
Steel in sheets.....	24,818	26,397
Wrought Steel.....	4,009	2,761
Pig Iron.....	9,801	11,701
Scrap Iron.....	3,608	11,048
Iron Wire.....	3,761	3,839
Iron Rails.....	10,435	29,351
Sheet Iron.....	44,833	19,795
Other Iron.....	247,968	252,726
Nails.....	18,242	10,482
Wrought Iron.....	24,312	23,003
Castings.....	21,107	24,733

—Moniteur des Intérêts Matériels.

WEST INDIES.

PORT OF SPAIN, TRINIDAD, February 1, 1889.—**Asphaltum.**—A moderate business has been done during the fortnight at \$14.04 for Boiled ½ ton, f.o.b., including export duty, and \$6.84 for crude. January shipments have amounted to 1462 tons, as against 3631 in 1888, and 1175 in 1887. **Exchange.**—Drafts on London, 90 days' sight, may be quoted \$4.74 @ \$4.80.—E. P. Masson

SPAIN.

BILBAO, February 9, 1889.—**Iron Ore.**—Our market has been tolerably active, sales being restricted to a few single cargoes for immediate shipment. Meanwhile quotations have remained firm at 8/ @ 8/3 for Campanil and 7/ @ 7/3 for Rubios. The stock of Campanil is so much reduced that some mining companies have refused considering higher figures than those quoted. Meanwhile there is a glut of steamers, 140,000 tons ships' room waiting to take their turn in loading Ore. The weather has been so rainy that it has been impossible to take cargo regularly. Total shipments since January 1 amount to 416,836 tons, as compared with 446,642 same time last year. **Pig Iron.**—The export has been trifling, but there are now ready to take cargo four steamers and one sailing vessel for abroad and three steamers for the Peninsula.

P. S.—February 16.—There has been more doing, Rubios selling down to 7/, yet the actual amount shipped during the week has been restricted to 65,000 tons, in spite of the many steamers ready to load. In consequence of the frequent rain, nothing was done in the way of loading for several days. From January 1 to date there have now been shipped altogether 481,818 tons, against 504,410 last year. **Pig Iron.**—There were exported during the week 5492 tons, and shipped coastwise 1499. **Jet.**—Jet mining has been going on steadily for several years past in the provinces of Santander and Oviedo, the bulk of the product being sent to England; but for the moment competition between the various Spanish mines has caused the Oviedo production to temporarily shut down, the Santander Jet being offered at a

notable reduction, and the superior quality of the Oviedo not being fully appreciated. Washed Oviedo Jet in blocks has been selling hitherto within the range of 30 and 240 rials, according to quality and size of blocks, ½ quintal of 50 kg., the Spanish rial equalling 5¢ American. The Oviedo Jet can be worked to better advantage than the Santander, being harder, and therefore not splitting into chips as easily.

Export from Spain During the Past Three Years.

	1886.	1887.	1888.
Tons.	Tons.	Tons.	Tons.
Calamine.....	26,624	22,841	26,098
Pyrites.....	671,897	766,801	825,045
Iron Ore.....	4,187,527	5,215,713	4,563,773
Pig Iron.....	49,420	115,359	73,677
Precipitate.....	27,003	29,800	29,105
Quicksilver.....	541	1,355	1,105
Pig Lead.....	114,473	130,797	129,160

Total.....5,077,483 6,282,756 5,647,969

—Bilbao Marítimo y Comercial.

Status of the Blast Furnaces.

Reports from the blast furnaces received to date are not complete enough to enable us to present the final figures. We may state, however, that there has been no change whatever in New York, New Jersey or in the Upper Susquehanna Valley. In the Schuylkill Valley there has been a falling off in the capacity through the blowing out of Edge Hill and of Merion, nearly compensated, however, by the blowing in, on the 12th ult., of the Norristown. Phoenix blew in a second furnace on the 9th ult., but, on the other hand, one of the Pioneer furnaces stopped during February. In the Lehigh Valley the Allentown Rolling Mill Company blew in one furnace in February, and one of the Coplay stacks is at work. Against this there is to be noted that one Crane is out and that Keystone, one of the stacks of the Thomas Iron Company, has gone out for repairs, and will not be blown in before spring. Durham stopped toward the end of February, but is expected to be at work again in a few days. Reviewing the situation generally, among the anthracite furnaces there has been a slight falling off.

Reports thus far received from the coke furnaces indicate a slight decline in the output. In the Shenango, Juniata and Conemaugh and Youghiogheny valleys there has been no change whatever. In Maryland, Catocin was to start on the 4th. In Virginia and West Virginia no changes are reported thus far, and the same is true of Illinois and Indiana. In Ohio Emma has stopped, and Glasgow, in the Hocking Valley, is idle. In the Mahoning Valley Thomas blew in on the 27th ult., after a stoppage of 39 days, the furnace starting nicely on a heavy burden. In the South the only change reported thus far is the blowing out of Bibb Furnace. In Kentucky the second Ashland resumed late in the month. On the whole the indications point to a slight decline in the make.

The Atchison Car Spring Company, of Chicago, are having a serious time with the residents in their vicinity. Fish oil is used in the works to temper the springs, and it is claimed by the neighbors that the fumes arising from the burning oil are unbearably nauseating. Complaint is also made of the shaking of houses by the trip hammers used in forging the steel. The company have been beaten in the suits entered against them in the lower courts, having been fined some months since for maintaining a nuisance in the fish-oil tempering vats, and on the 2d inst. they were again mulcted. A more agreeable tempering liquid than fish oil can probably be found, but it is difficult to see how the work of forging springs can be prosecuted without noise or concussions.

Hardware.

Trade continues in fair volume and without special feature. Prices are remarkably steady, and with the exception of the advance in the price of Screws, as noted below, nothing of special importance has occurred. The trade throughout the country are buying carefully, but stocks on hand are generally low, and it is anticipated that before long there will be more marked activity. The manufacturers generally are pursuing a conservative course, avoiding undue accumulation of stock, and in some lines there is more or less difficulty in obtaining prompt shipments.

Barb Wire.

The market is characterized by more activity and prices remain without material change. In the territory covered by the agreement of the Eastern makers prices are regularly maintained, while for lots outside some slight concessions are made in special cases.

With reference to the statement in regard to the Barb Wire litigation in our issue, 24th ult., to the effect that suits against infringers of the Glidden patent were being pushed with energy, we have the following from the St. Louis Wire Mill Company, St. Louis, Mo.:

This statement is without the slightest shadow of foundation as far as facts are concerned. It is probably a well-known fact that our two companies, the Braddock Wire Company, Rankin, Pa., and St. Louis Wire Mill Company, St. Louis, Mo., are manufacturing more unlicensed Barb Wire than all others put together. Notwithstanding this fact the Washburn & Moen Mfg. Company withdrew their motion for preliminary injunction against Braddock Wire Company, pending in the United States Court at Pittsburgh, on July 1, 1888, at their own cost, not daring to go to trial on the merits of the case, although we, through our attorneys, answered ready at that time. Since then they have not made a move in court against either of our companies, notwithstanding the fact that we submitted a proposition, which you published in your valuable columns under date of July 23, 1888, offering to stipulate and go to trial on very short notice. Not later than last week we, through our attorney, John R. Bennett, 237 Broadway, New York, made the following offer to attorneys of Washburn & Moen Mfg. Company and I. L. Ellwood & Co., of Chicago, Ill.: To stipulate and prepare for a test case to be tried on short notice before His Honor, Judge Brewer, of the Eighth District, and any other United States Circuit Judge before whom any Barbed Wire patent may now be pending. This would include Judge McKennon of the Pennsylvania District, Judge Jackson of the Ohio District, or Judge Gresham, of the Illinois District. Each one of these districts, however, represents several States. This proposition, through their attorneys, the Washburn & Moen Mfg. Company refused to accept, although Judge Brewer is the only Judge who ever sustained the original Glidden patent, which is the only patent the Washburn & Moen Mfg. Company claim to be of any value, and which in its latest adjudication was declared invalid by His Honor, Judge Shiras, of the United States Court of the Eastern District of Iowa, in Dubuque, on January 5, 1888, since which time no decision has been obtained by the Washburn & Moen Mfg. Company sustaining any of their Barbed Wire patents anywhere in the known world.

Screws.

Under date March 1 the associated manufacturers of Wood Screws issue a revised list, which is given on another page, and announce the following discounts:

Flat Head Iron.....	50 %
Round Head Iron.....	40 %
Flat Head Brass.....	45 %
Round Head Brass.....	35 %
Flat Head Bronze Metal.....	45 %
Round Head Bronze Metal.....	35 %
Flat Head Iron Screws, Blued, are 5 per cent. advance on the net prices of the regular goods.	

A comparison of the prices thus announced with those which have heretofore prevailed shows that an advance of about

10 per cent. is made in the price of Iron Screws, and an advance of from 20 to 25 per cent. in the price of Brass Screws. The list, it will be observed, is thoroughly revised, and is regarded by the manufacturers as satisfactorily graded for the different sizes of Screw. The combination existing between the Screw companies enables them to make this advance and maintain firmly the new prices. This action would probably have been taken some time ago had it not been for the presence in the market of large stocks of Screws purchased at the old figures, some of which still remain to give more or less irregularity to current prices. But the stocks thus held are pretty well broken, and it is expected that prices will be well maintained.

The American Screw Company, Providence, R. I., have issued the following discount sheet, March 1, 1889, which besides giving the prices of the regular Wood Screws referred to above, gives, it will be observed, quotations on a large variety of special Screws of which they are manufacturers:

Iron, Bright, Flat Head.....	50 %
Iron, Bright, Round Head.....	40 %
Iron, Blued, Flat Head.....	{ Add 5 per cent. to net amount of invoice. } 50 %
Iron, Blued, Round Head.....	40 %
Iron, Felloe, Flat Head.....	45 %
Iron, Pinched Head.....	45 %
Iron, Japanned, Flat Head.....	40 %
Iron, Japanned, Round Head.....	30 %
Iron, Tinned, Flat Head.....	40 %
Iron, Tinned, Round Head.....	30 %
Iron, Lacquered, Flat Head.....	55 %
Iron, Lacquered, Round Head.....	30 %
Iron, Bronzed, Flat Head.....	35 %
Iron, Bronzed, Round Head.....	30 %
Iron, Brass Capped, Burnished.....	40 %
Iron, Silver Capped, Burnished.....	40 %
Iron, Nickel-Plated, Flat Head, Burnished.....	75 %
Iron, Nickel-Plated, Round Head, Burnished.....	72 1/2 %
Iron, Silver-Plated, Flat Head, Burnished.....	50 %
Iron, Silver-Plated Round Head, Burnished.....	50 %
Iron, Brass-Plated, Flat Head.....	55 %
Iron, Brass-Plated, Round Head.....	55 %
Iron, Copper-Plated, Flat Head.....	55 %
Iron, Copper-Plated, Round Head.....	55 %
Brass, Flat Head.....	45 %
Brass, Round Head.....	35 %
Brass, Lacquered, Flat Head.....	35 %
Brass, Lacquered, Round Head.....	30 %
Brass, Bronzed, Flat Head.....	35 %
Brass, Bronzed, Round Head.....	30 %
Brass, Silver-Plated, Flat Head, Burnished.....	50 %
Brass, Silver-Plated, Round Head, Burnished.....	50 %
Brass, Nickel-Plated, Flat Head, Burnished.....	66 2/3 % & 6 %
Brass, Nickel-Plated, Round Head, Burnished.....	66 2/3 %
Copper, Flat Head.....	35 %
Copper, Round Head.....	30 %
Bronze, Flat Head.....	45 %
Bronze, Round Head.....	35 %
Phosphor Bronze, Flat Head.....	30 %
Phosphor Bronze, Round Head.....	20 %

Miscellaneous Prices.

The address of Gaston, Weston & Ladd, whose Silver Compound, Prestoline, Prestoline Polish and other polishing compounds were referred to in our issue of the 21st ult., is 46 Beekman street, New York. The discounts on these goods from the price list then published are as follows:

Prestoline.....	20 & 10 %
Prestoline Paste.....	33 1/3 %
Gaston's Silver Compound.....	33 1/3 %

The following are the list prices of C. A. Maynard's Handled Planters' and Field Hoes, of which a description is given on page 379, and which are put on the market by Robert Murray, sole agent, 24 Duane street, New York. The list is subject to a discount of 65 per cent.

Planters' Hoes.				
	6 6 1/4	7 7 1/4	8 8 1/4	
Polished Blades, in. in. in. in. in.				
per doz.....	\$10	\$10.50	\$11	\$11.50
Unpolished				
Blades, per doz.	9.50	9.50	10	10.50
Field Hoes.				
Polished Blades, per doz.....	\$8			

William H. Jacobus, 90 Chambers street, New York, has been appointed agent for the sale of the Prindle Improved Door Hanger. It is listed at \$6 and is subject to a discount of 40 per cent.

Items.

The Wyeth Hardware and Mfg. Company, of St. Joseph, Mo., have been put to serious inconvenience by the fire which destroyed the printing establishment of the Geo. W. Crane Publishing Company, at Topeka, Kan., on the morning of the 22d of February. The entire edition (3000 copies) of their new catalogue, almost ready for delivery, was utterly consumed, together with the woodcuts and electrotypes, many of which had been specially engraved for them, which were being used in the last part of the book. An immense amount of work had been put on this catalogue by the officers of the company, who had intended to make it a publication which would be appreciated by the Hardware trade generally and become a valuable book of reference, so that its loss is seriously felt. As to future plans, nothing can be formulated until matters are somewhat settled at Topeka.

The trade will observe on page 83 the advertisement in which Peabody & Parks, Troy, N. Y., illustrate the Farmer's Favorite Potato Bug Exterminator, manufactured by them under Eddy's patent. Its utility for applying Paris green, phosphates, &c., to plants is referred to.

D. W. Bosley & Co., Chicago, Ill., issue a six-page leaflet, in which they illustrate their Window Cleaners, Floor Scrubbers, and Bar and Counter Cleaners.

The Hardware business of H. M. Gay & Bro., Milwaukee, Wis., has been discontinued, and Henry M. Gay has made an engagement with Horton, Gilmore, McWilliams & Co., Chicago, Ill., and will travel for them over a portion of the route which for the past 14 years he has been covering for the Biddle Hardware Company, Philadelphia. He will thus visit the larger towns in Wisconsin and Minnesota. Geo. S. Gay engages in the Hardware business at Jacksonville, Ill., in partnership with George Hayden, the style of the firm being George Hayden Hardware Company.

It will be seen that in their advertisement on page 87 the New Departure Bell Company, for whom John H. Graham & Co. are agents, 113 Chambers street, New York, illustrate the New Departure Door Bell and point out its advantages.

Canastota Knife Company, Canastota, N. Y., are sending out a new illustrated catalogue and price list of their line of Pocket Knives. It is obvious that in the preparation of it much care has been taken to make it as attractive and serviceable as possible. An interesting variety of patterns is exhibited, the engraving of the handles representing satisfactorily the different materials of which they are made. It is certainly one of the most complete and satisfactory Pocket Knife catalogues offered to the trade, and illustrates the enterprise and progress of the company.

Hoen & Von Kapff, Baltimore, Md., have prepared a small pamphlet which simply calls attention to some of their leading lines and the parties for whom they are agents, without giving illustrations or descriptive matter. There are such headings as Guns, Ammunition, Gun Material, Reloading Tools, &c., under which leading articles in these departments are designated, and the names of manufacturers whom they represent are given with the principal goods manufac-

ured by them. The pamphlet seems well designed for the purpose for which it is intended.

The G. S. Foos Company, Springfield, Ohio, send out in convenient form samples of printed matter which they prepare for the use of their customers, illustrating and describing the various manufactures of the company. A number of leaflets are thus offered to the trade, showing the different kinds of goods, and calling attention to them in a popular way, so as to aid the merchant in selling them. The trade will appreciate the advantage of such literature.

The Collins-Gibbons Mfg. Company, St. Louis, Mo., issue a small pamphlet devoted to a description of their Spiral Wire Straightener and the Little Giant Wire Cutter. Illustrations of these articles are given and their utility is pointed out.

Springfield Glue and Emery Wheel Company, Springfield, Mass., manufacturers of Sapphire Garnet Paper, Emery and Corundum Wheels, and Emery Wheel Machinery, issue a circular calling attention to the advantages of Garnet Paper and alluding to the extensive mines of Garnet which they own. Their Sapphire Garnet Paper is especially referred to.

It will be seen from the announcement on page 63 that an established commission house on the Pacific Coast is desirous of representing one or two more lines of Hardware or Lumbermen's Supplies, for which they desire sole agencies for that market. We understand that they have represented satisfactorily some Eastern manufacturers for some time.

The Cincinnati Stamping Company, Cincinnati, Ohio, issue a circular describing their Water Coolers, of which different patterns are illustrated.

Early last Sunday morning the Hardware establishment of W. H. Hartley & Sons, Quaker City, Ohio, was destroyed by fire. The dwelling of Wm. H. Hartley, adjoining, was also destroyed, as well as other buildings. In addition to the destruction of the building and stock, the loss of books and papers is a serious one. The destruction caused by the fire is estimated to amount to about \$25,000, with an insurance of \$1000.

American Blower and Forge Company, Lancaster, Pa., issue a catalogue illustrating their different Forges and Blowers, Upright Hand Drill and New American Tire Bender. They call special attention to the Automatic Bell Traction Motion Blower, and point out the advantages possessed by it.

The Chalfant Mfg. Company, Atglen, Pa., illustrate in their catalogue the variety of goods in the Hardware line, with house-furnishing articles, Iron Toys and Floral and Garden Tools, which they manufacture. Sad Irons, a variety of Toilet and other special Irons, such as Druggists', Hatters', &c., Brackets, Soap Dishes, Dumb Bells, Foot Scrapers, Harness and other Hooks, Drawer Pulls, Chest Handles, &c., are thus represented.

The large Cabinet Hardware house of Gibson, Parish & Co., occupying the building at Nos. 78 and 80 Randolph street, Chicago, was totally destroyed by fire on the night of the 1st inst. The stock was worth about \$140,000. Of this between \$75,000 and \$80,000 was in Silk Plushes and Upholstery Goods, and the balance was composed of general Cabinet Hardware. The insurance amounted to about \$135,000, distributed among numerous companies, with policies ranging from \$2500 to \$5000. It will be seen, therefore, that the firm will be able to resume business without any difficulty as

soon as they can find a suitable location. They have established a temporary office at 84 Washington street, second story. It is probable that when they resume they may confine their attention exclusively to Cabinet Hardware. The firm consists of W. D. Gibson, Charles P. Parish and G. H. Lussky, who have been associated together for about eight years. They had occupied the building just burned for some six years.

The following personal items from Chicago are of interest: A. C. Bartlett, of Hibbard, Spencer, Bartlett & Co., has gone to Europe with his family, to be absent for several months. J. McGregor Adams, of the Adams & Westlake Company, is confined to his house with a sprained ankle, which has proved to be a very serious injury. Addison Kelley, of Kelley, Maus & Co., has gone to the Bermuda Islands for a vacation of a month or two. A. C. Mason, of the Mason & Davis Company, has taken a trip to California, combining business with pleasure. James H. Shields, of the Shields & Brown Company, is visiting New York in the interest of the firm. R. C. Hannah, of the North Chicago Rolling Mill Company, is now voyaging in the West Indies.

A copartnership is announced, under date January 23, between D. P. Hyatt, recently of the firm of Bacon, Flote & Co.; J. H. Matthews and A. P. Gahr, under the firm name of Hyatt, Matthews & Gahr, agents. Their offices are at 45 and 46 Mitchell Building, 99 West Fourth street, Cincinnati, Ohio. Their business is the sale of Iron and Steel manufactures, also Pig Iron, Iron Ores, Coke and Rails.

A fire at Lostant, Ill., which occurred on the 28th ult., destroyed a number of business houses, including the Hardware stores of Thomas Drew and Peter Martensen, who carried a stock of \$6000 to \$10,000 each, on which the press dispatches state there was no insurance.

Matthews & Willard Company, Waterbury, Conn., have announced, under date February 16, that, owing to temporary financial embarrassment, C. N. Wayland has been appointed receiver of the company. The object of this action was to keep the business alive in all its branches. They give assurance that orders will be filled with promptness and accuracy, and that the quality of the goods will be kept at a high standard and every effort made to introduce attractive novelties.

We are advised that C. O. Greene, of the late firm of Sheldon & Greene, who for the past four years has represented the Smith & Anthony Stove Company in the West, will for the present represent the Weir Stove Company in New York and surrounding States.

The Syracuse Fibre Ware Company, for whom W. A. Comstock is the Chicago manager, have secured a contract for furnishing the public school buildings of Chicago with water-pails to be used in case of fire. The contract calls for about 3000 pails. It was secured in the face of severe competition from the manufacturers of pails of all descriptions. The demand for ware of this character is growing rapidly, and while it is but natural that the approach of spring should quicken sales, yet the dealers see a larger growth than would reasonably arise from this cause, and they are looking forward to a heavy year's business.

Hughes & Otis, of Fond du Lac, Wis., have bought the stock of their chief competitor, the C. H. Benton Hardware Company, and now have the largest establishment in their line in that part of the State. They are pushing their business with vigor, as this absorption of a rival house well indicates.

The Holmes & Edwards Silver Company, Bridgeport, Conn., call special attention in their advertisement on page 73 to their Mexican Silver Spoons, Forks, &c. The point is made especially in regard to these goods that they resist the atmospheric influence better than any other metal goods in the market, while their other qualities make them very desirable. As there is no plate to wear off, any silver powder, chalk or electroline can be used to clean them, and it is said that in constant use they become even whiter and more beautiful.

The corporate name of the Strong-Hackett Hardware Company, Minneapolis, Minn., has been changed to the C. W. Hackett Hardware Company. Its officers are: C. W. Hackett, president; H. B. Gates, treasurer; and T. G. Walther, secretary.

E. C. Meacham Arms Company, St. Louis, Mo., issue in new and attractive style a catalogue of Athletic Goods, to which is prefixed a discount sheet for use of dealers and clubs only. The catalogue represents a variety of articles and machines for gymnastic exercise, including Chest Machines, Expanders and Developers, machines for different uses, such as exercising the leg, ankles, wrists, fingers, &c., Traveling Parallels, Rowing Machines, Horizontal Bars, Traveling Bars, Vaulting, Jumping and Climbing Apparatus, Boxing Gloves, Dumb Bells, Ten Pins, Garments for the gymnasium, &c. It will thus be seen that the catalogue is unusually interesting as relating to contrivances which are not often brought to the attention of the trade.

S. L. Allen & Co., Philadelphia, Pa., advise us that in addition to their distributing depots in Warren, Ohio, Detroit, Mich., Milwaukee, Wis., and St. Louis, Mo., they have established another distributing depot at Louisville, Ky., for the benefit of their trade in the Southwest, and they will hereafter be glad to make quotations on their goods at any of these points. Inquiries should be addressed to Philadelphia, as they make quotations and render all invoices from there.

The American Buckle and Cartridge Company, West Haven, Conn., for whom Alford & Berkele Company, 77 Chambers street, New York, are agents, have recently bought the plant, tools, &c., of the American Gun Implement Company, and are busy placing the machines, &c., in their factory, so that in a short time they will be ready to make Brass Shells, Loading Tools, &c. They expect to continue manufacturing the Fowler brand of Brass Shells, and intend to furnish an article of superior quality. We are also advised that there is no foundation for the rumor which has prevailed more or less widely to the effect that they have been negotiating with the Ammunition Association for the sale of their plant.

The National Self-Heating Sad Iron Company, St. Louis, Mo., have removed from 109 North Sixth street to 1106 Pine street. In their new location they have considerable more working space, and are thus enabled to better handle the increasing trade which often taxed the capacity of their old quarters. Their showrooms are much larger and they have excellent shipping facilities in the rear. They report a steady increase in their trade, and have no reason to complain for want of orders.

The Kelly Barb Wire Company, of Chicago, are distributing a "Book of Valuable Information" among their customers, which comprises some 36 pages of miscellany on a multitude of interesting subjects. An accompanying circular calls attention to the Kelly Yielding Barb, which is the specialty of this company. While the fencing which they make is

REVISED SCREW LIST.

Iron Wood Screws.

March 1, 1889.

No.	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	20	22	24	26	28	30
In.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.
$\frac{1}{4}$	20	20	20	20	20																				
$\frac{3}{8}$	20	20	20	20	20	20	22	24	26	30															
$\frac{1}{2}$	20	20	20	20	22	24	26	28	33	37	42	45												
$\frac{5}{8}$	20	20	20	22	24	26	28	31	35	40	44	48	53	58										
$\frac{3}{4}$	20	22	24	26	28	30	32	36	41	46	50	56	62	75	85								
$\frac{7}{8}$	22	24	26	28	30	32	35	40	44	48	54	60	66	80	90								
1	27	28	30	32	34	38	42	46	52	58	64	72	83	95	110	130	150					
$1\frac{1}{4}$	32	34	36	39	42	47	50	56	62	70	77	87	100	120	135	160	180	210			
$1\frac{1}{2}$	37	40	44	47	50	54	57	64	70	80	87	97	110	130	145	170	190	220			
$1\frac{3}{4}$	50	54	57	60	67	74	80	87	97	107	120	140	155	175	200	240				
2	64	67	70	74	77	80	87	94	105	115	127	145	160	190	225	260				
$2\frac{1}{4}$	84	87	90	94	97	100	110	125	137	155	170	205	250	280					
$2\frac{1}{2}$	97	100	104	107	110	115	120	135	147	165	180	220	270	310					
$2\frac{3}{4}$	127	130	134	137	140	150	160	178	200	240	290	340						
3	154	157	160	164	167	175	180	200	220	260	320	380	460				
$3\frac{1}{2}$	197	200	204	207	210	215	220	240	270	310	370	430	510				
4	220	....	270	....	280	....	320	360	420	490	560				
$4\frac{1}{2}$	360	....	380	430	470	570	650				
5	520	540	570	650	740	900			
6	700	740	790	890	1000	1120		

Brass and Bronze Metal Wood Screws.

No.	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	20	22	24	26
In.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.	Cts.
$\frac{1}{4}$	42	42	44	46	48																		
$\frac{3}{8}$	42	43	45	47	50	54	57	63															
$\frac{1}{2}$	45	47	49	54	57	64	69	79	88	99												
$\frac{5}{8}$	48	52	56	63	69	77	88	99	112	125	140										
$\frac{3}{4}$	56	58	60	67	75	84	98	111	126	140	158	175	195	215	237						
$\frac{7}{8}$	72	74	76	79	81	93	108	123	139	156	175	194	216	239	264						
1	81	84	86	88	102	119	135	153	172	192	214	238	263	290		348				
$1\frac{1}{4}$	108	111	113	116	118	139	158	171	202	227	253	281	311	344	377	413	490			
$1\frac{1}{2}$	149	152	154	156	159	181	207	234	263	294	327	362	400	440	481	571			
$1\frac{3}{4}$	196	199	201	204	233	264	298	334	372	414	455	500	548	651	763	886		
2	252	254	256	259	261	296	335	375	417	463	511	561	616	730	856	994		
$2\frac{1}{4}$	360	364	366	368	371	416	463	514	566	624	683	810	950			
$2\frac{1}{2}$	499	501	504	506	508	564	623	684	751	891	1044	1210		
3	720	722	724	727	729	732	734	....	884	1050	1230	1426	1638	

classed as Barb Wire, it is nevertheless a distinct type, the action of the barb constituting merely a prick and not a tear. The company claim that as a consequence of their barb yielding under pressure it can not seriously injure stock.

D. C. Baldwin, Lockport, Ill., has sold the greater part of his stock to O'Connell & Sloan, and rented to them his main store, where they will carry on the business. Mr. Baldwin has been in the Hardware trade 36 years.

The Taft Company, manufacturers of Wood Ornaments at Hartford, Conn., whose factory was destroyed by fire a few months since, have secured new quarters with greatly increased facilities, and are prepared to fill orders promptly.

A circular letter issued by the Cincinnati Corrugating Company refers to their Sheet-Metal Lath in the following terms: By improvements which we have made in the machinery and processes of manufacture of this Lath, we are now enabled to furnish it in the forms most approved by

the architectural profession and builders generally, and also at a price which will compare very favorably with the Wire Cloth or any other improved Lath now on market. Hence, as can be readily seen, there is a great advantage in the corrugated Metallic Lath as we now make it, on account of its great rigidity; the fact that it can be adapted to any kind of furring; to special curved surfaces, and between large spans where it would evidently be impossible to use the Wire Cloth. Another great advantage consists in the fact that it requires no stretching in putting on, which makes it very difficult to make a good job, unless by an expert in the business and very careful work. That is to say, it would be almost impossible with our Lath to slight work, as in the case of many other kinds.

Trade.

From Dudley Bros. & Lipscomb, Nashville, Tenn., we have the following review of the market:

Trade for 1889 has been better than for years past and continues good, though we think the open winter we have had has caused many of

the trade to buy their spring goods early, and this may affect sales later in the season. Prices have been maintained fairly well, though all our jobbers are selling at very close margins. The country generally is in good condition, and we do not hear much complaint in regard to collections. Steel Nails are worth \$2.10; Burden's Horseshoes, \$4.25; Galvanized Barbed Wire, $3\frac{1}{4}$ to $3\frac{3}{4}$ cents; Merchant Bar Iron, 1.85 to 2 cents. Macey & Co. have removed to the house recently occupied by J. H. Fall & Co. The latter parties have fitted up in another building on the same street one of the handsomest retail Hardware stores to be found anywhere. Our banks report an unusual surplus of money on hand. On the whole, we are hopeful for a prosperous year's business.

A recent issue of the Pittsburgh Dispatch, in an interview with a leading Hardware merchant of that city, gives the following expression of his views in regard to the situation and outlook:

The Hardware trade has undergone great changes in recent years, and the whole tendency has been toward lower prices, and as a consequence closer margins of profit. There are good and sufficient reasons for this downward drift of prices which has brought so many of our goods down to scarcely a living profit for manufacturers. In nearly every line business has been overdone. The prosperity of

a few years ago led to expansion beyond the country's needs. Manufacturers were not content to let well enough alone. When they were having nice profits they wanted more, and very few of the manufacturers of Hardware but enlarged their capacity, so as to gather in more of the sinews of war. The capacity of our factories has grown too fast for the wants even of this great and expanding country. Prices have drifted down so that in most lines margins are already wiped out for the manufacturer. And it is not now as it once was, that the output may be curtailed or factories stopped at the will of the owner. With such immense establishments as we now have it is better to keep the wheels moving even at a small loss than to stop. The loss would be greater to put out the fires, and the only thing to do is to keep pegging away in the hope that the tide will turn. I know of large manufacturing establishments devoted to the production of Hardware, Nails, for instance, which are run at a loss, but it is better to the owner to run them, for the loss would be greater if the factories were closed up. The time has gone by when our manufacturers can shut up at a moment's notice, or when one product proves unprofitable they may turn their works into other channels.

It is too early in the season to give any indications of what the spring trade will be. We never do much till the winter is broken. Trade has been quiet since the first of the year, but not more so than usual. In fact, we have sold more goods than we did for the corresponding period of last year, but margins have been much closer. There is a hopeful feeling. While hopes have not yet materialized, because the time has not come for this, I feel confident that when the spring trade opens up we will see a very active movement. The country is growing and expanding at such a rate that it will not take long to overcome the present lull, which has been caused by overproduction.

Goulds, Austin & Caldwell Company.

Chicago, Ill., have issued the following discount sheet, February 20, applying to their general catalogue of 1885 and Gould's Pump catalogue, 27th edition, 1889:

Western Dutchman Scythes, 26 to 28 in.	per doz.	\$3.50 net
Leader Scythes, 30 in., per doz.		3.50 "
Bush Scythes, per doz.		3.50 "
Austin L. H. Sq. Point Shovels, per doz.		7.00 "
Amesbury L. H. Sq. Point Shovels and Spades, per doz.		5.25 "
Farmers' Friend L. H. Sq. Point Shovels, per doz.		4.00 "
Drain Spades, 18 in., per doz.		6.00 "
" 20 in., " "		6.25 "
" 22 in., " "		6.40 "
Post Spades, 18 in., per doz.		6.00 "
" 18 in., " "		6.25 "
" 20 in., " "		6.40 "
" 22 in., " "		6.50 "
Ditching Spades, 22 in., per doz.		6.50 "
Austin Tadders, improved, per doz.		20.00 "
Queen Cuckie Mills, each.		4.00 "
Cahoon's Hand Seeders, each.		3.25 "

Shellers.

Tony Shellers, single	\$5.00 net
" " with Fan.	5.50 "
Feed Tables, " " extra.	0.35 "
Tony Shellers, single, with Pulley, plain.	6.50 "
Tony Shellers, single, with Pulley, with Fan.	7.00 "
Tony Shellers, double, complete.	12.00 "
Burrall Iron Sheller.	4.50 "
Racine Farm Fanning Mills, 55 and 5, extras.	40 %
Racine Warehouse Mills, 35 and 5, extras.	40 %
Peckham's Furnace Calendars.	30 %

Feed Mills.

Nos. 1 and 1½, Austin Clipper Pulley Mills.	\$25.00 net
No. 2, Austin Clipper Geared Mill.	27.50 "
No. 4, Austin Clipper Pulley Mill.	45.00 "
No. 5, Austin Clipper Corn and Cob Mill.	50.00 "

Steam Generators.

Austin Steam Generator, Fig. 1.	\$30.00 net
" " " " 2.	35.00 "
" " " " 3.	36.00 "

Ross Cutters.

No. 01 to 17 inclusive	40 %
Carriers	20 %
Fredericks' Pat. Equinizers, per doz.	\$12.00 net
Ox Bows.	4.50 "

Wheelbarrows.

Common R. R. Barrows, Wood Wheel, per doz.	\$10.00
K. and J. Bolted R. R. Barrows, W. W., per doz.	16.00
K. and J. Bolted R. R. Barrows, Steel Wheels, per doz.	17.75
Perfect Bolted R. R. Barrows, W. W., per doz.	14.00
Globe Garden Barrows, W. W., per doz.	27.00
Globe Garden Barrows, Steel W., " "	31.00
K. and J. Hercules Garden Barrows, W. W., per doz.	28.00
K. and J. Hercules Garden Barrows, Steel Wheels, per doz.	30.00
K. and J. B. H. Stone Barrow, W. W., per doz.	36.00

K. and J. Mortar Barrows.	per doz.	\$25.00 net
Tubular Iron Barrows.		40 & 5 %
Corrugated Steel Tubular Barrows, see circular.		50 %
Barrel Carts, without Barrel.	each.	\$2.90

Lawn Mowers.

Buckeye Junior Lawn Mowers.		60 & 10 %
Buckeye Senior Lawn Mowers.		60 & 10 %
Globe Lawn Mowers.		60 & 10 %

Road Scrapers and Plows.

Steel Bottom Scrapers, 30 inch, each.	\$3.20
" " 32 " "	3.30
" " 34 " "	3.40
Slusser Scrapers, No. 1, each.	5.25
" " No. 2, " "	5.00
" " No. 3, " "	4.75
Columbus Solid Steel Scrapers, No. 1, each.	6.25
" " " " No. 2, " "	5.75
" " " " No. 3, " "	5.25

Runners for Columbus Scrapers, extra, per pair.	.50
Chicago Scrapers and Ditchers.	.30 %
Columbus New Pressed Bowl Wheeler, No. 2.	\$38.00 net
Columbus New Pressed Bowl Wheeler, No. 3.	\$42.00 "
Columbus Little Giant Wheelers.	27.00 "
Austin Special Township Plow.	12.00 "
Township or Breaking Plow.	13.00 "
Road or Grading Plow.	17.00 "
Wammoth Hard-Pan Plow.	40.00 "
Hand Carts.	.35 %
Malleable Iron Blocks, revised list.	.50 %
Star Forge and Blowers, send for circulars.	.50 %

Steam Pumps, &c.

Duplex Steam Pumps.	15 %
Royal Roller Feeders.	25 %
Centrifugal Pumps.	35 %

Pipe.

Galvanized Pressure Pipe.	40 %
Fittings.	20 %

Fittings.

Cast-Iron Elbows, Tees, Crosses, Caps and Reducers.	70 & 10 %
Plugs and Bushings.	75 & 10 %
Locknuts, Flange-Unions, Return Bends, &c.	70 & 10 %
Branch Tees and Hook Plates.	.65 %
Ceiling and Floor Plates.	.62 ½ %
Wrought-Iron Couplings, 70 & 5 % Nipples.	.70 %
Malleable Unions.	.67 ½ %
Flanges.	.65 %
Malleable Fittings, price list.	.65 %
" " per pound.	35 & 5 %

A.	25¢
B.	16¢
C.	13¢
D.	10¢

Iron Body Valves and Cocks.

Globe Angle, Cross, Check, Safety Back Pressure Valves.	70 %
Cocks with Brass Plugs, and all Iron Cocks.	65 %

Brass Steam Goods.

Brass Globe, Angle, Check and Cross Valves.	65 %
Steam and Service Cocks.	.60 %
Safety and Hose Valves.	.65 %
Butterfly Valves.	.55 %
Compression and Mississippi Gauge Cocks.	.60 %
Lubricators.	.65 %
Register Gauge Cocks.	.60 %
Cylinder Cocks.	.35 %
Steam Bibbs.	.55 %
Air Cocks.	.65 %
Water Gauges.	.65 %

List 2 Rod Rough, ½ x 12 glass, ¼ Pipe.	\$3.00
" 2 " Finished, ½ x 12 "	5.75
" 4 " " ½ x 12 "	6.00
" 4 " " ¾ x 16 "	10.00

Scotch Glass Tubes.	.80 %
Plain Oil Cups.	.65 %
Steam Whistles and Valves, except below.	.65 %
Mocking Bird Whistles.	.55 %
Single Bell Chime Whistles.	20 %

	No. 1.	No. 2.	No. 3.
	Without	With	With
	valve.	valve.	valve.
List Diam.	2.	3.	4.
	\$5.00	\$6.50	\$7.50
	4.	14.00	16.00
	5.	22.00	25.00
	6.	30.00	35.00
	8.	70.00	85.00
	10.	110.00	130.00
	12.	150.00	180.00

Steam Gauges, except below.	60 %
doz. 6 in. iron case, cheap, per	\$27.00

Lunkenhimer Goods—(S) Brand.

Lunkenhimer Regrinding Valves.	50 & 10 %
Jenkins's Disk Valves (Jenkins's List).	50 & 10 %
Radiator Valves.	50 & 10 %
Radiator Valves, Jenkins's Disk.	55 & 5 %
Peet Gate Valves.	50 & 10 %
Balanced Throttle Valves.	45 %
List.	\$7.50 8.00 9.00 10.00 12.00 16.00
Lunkenhimer's Lock Safety Valve.	50 %
Hummer's Automatic Cylinder Cocks.	50 %
Cody Oilers.	50 %
Loose Pulley Oilers.	40 & 5 %
Plain Oil Cups, Hinge Lid.	55 & 5 %
Lunkenhimer's Plain and Slide Top Cups.	55 & 5 %
Lunkenhimer's Automatic Cups.	55 & 5 %
Thompson Oil Pumps.	50 %
Lunkenhimer's Index Lever Cups.	55 & 5 %
Needle Valve Oilers.	50 %
Automatic Sight Feed Lubricators.	50 & 10 %

Tools.

Baxter Wrenches.	35 %
Bemis & Call Wrenches.	40 %
Alligator Wrenches.	50 %
Stillson Wrenches.	40 %
Pliers.	67 ½ %

Common Tongs.	60 %
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Revised List on Common Tongs:

Inches.	¾	1	1½	2	2½	3	4
List.	\$0.60	.65	.70	.75	.80	.85	1.10

Inches.	1½	2	2½	3	4
List.	\$1.30	1.50	1.90	2.50	3.50

Brown's Tongs, List No. 1.	\$1.30; 1½, \$1.05; 2, \$2; 3, \$3; 4, \$6; 5, \$11; 6, \$25.
Robbins's Tongs.	40 %
Lifting and Sliding Tongs.	50 %
Barnes's Cutters.	60 %
Stanwood Cutters.	50 & 20 %
Saunders's Cutters.	45 %
Die Plates and Dies.	62 ½ %
Taps and Reamers.	70 & 10 %

Walworth Imp. Pipe Cutter, same list as Stanwood.	50 & 20 %
Jarecki Screw Plates.	35 ½ %

No. 2, List.	\$16.00
No. 3, " "	20.00
No. 3½, " "	22.50
No. 4A, " "	35.00
No. 4B, " "	50.00

Duplex Die Stock.	40 %
Lightning Taps and Dies.	25 %
Pump Plates.	60 & 10 %
Forbes's Die Stocks.	Net
Pipe Machine.	Special
Ratchets, low list.	40 %
Pipe Vises.	50 %

Saunders's Angle Plate Vises:	
No. 1, heavy pattern.	\$5.75
No. 2, " "	8.75
No. 1, light " "	5.25
No. 2, " "	8.00

Malleable Hinged Pipe Vise. No. 1.	5.00
" " No. 2.	5.75
" " Vises.	25 %
Smith's Vises.	40 & 10 %
Little's Pipe Holder.	\$3.50 net
Watson's Improved Pipe Lifter.	25 %

Rubber Belting.

Crown Standard Rubber Belt, full rolls.	70 & 5 %
Crown Standard Rubber Belt, Cut.	70 %
Crown Extra Rubber Belt.	60 & 5 %

Rubber Hose.

Competition Hose, ¾ x 3 ply.	\$0.05
Black Plumbers' Hose, ¾ inch x 3 ply.	.07
Black Plumbers' Hose, 1 inch x 3 ply.	.10
Red Plumbers' Hose, ¾ inch x 3 ply.	.07 ½
Red Plumbers' Hose, 1 inch x 3 ply.	.10 ½
Red Standard Hose, ¾ inch x 3 ply.	.09
Red Standard Hose, 1 inch x 3 ply.	.12
Black Standard Hose, other sizes.	70 & 5 %
Extra Hose, Red or Black, ¾ and 1 inch x 3 ply.	60 & 10 %
Extra Hose, other sizes, Black.	60 & 10 %

Eureka Cotton Hose.

¾ inch, coupled, 9c.	¾ inch, coupled, 10c.
1 inch, not coupled, 15c.	

If orders during season amount to 1000 feet of any one size, a rebate of 1 cent per foot will be allowed on that size only.

Steam and Brewers' Hose.	60 & 5 %
Wire Suction Hose.	60 & 10 %
Hard Rubber Suction Hose.	70 %
Fire Hose, special prices on application.	
Rubber Tubing.	60 & 10 %

Packing.

C. I. Sheet Packing Standard.	\$0.14
C. I. Sheet Packing, Extra.	70 & 5 %
Pure Sheet Packing.	.65 %
C. I. Gaskets and Rings.	.60 %
Piston Packing.	.60 %
Empire Packing.	\$0.80 net.
Eureka Packing.	.40 "
Morrison Packing.	.40 "
Soapstone Packing.	.10 "
Tupper's Flax Packing.	.60 "
Graphite Packing.	.60 "
American Hemp, Extra.	.14 "
Russian.	.16 "
Italian A.	.21 "
Italian B.	.16 "
Jute Packing.	.08 "

Asbestos Goods.

Asbestos Mill Board, John's.	\$0.13 ½ net.
Asbestos Paper, John's.	.13 ½ "
Asbestos Totted Cloth, Rubber Core, Imported.	.45 "
Asbestos Rope, Imported.	.20 "
Asbestos Wick, John's.	.30 "
Asbestos Wick, Braided, Imported.	.25 "
Asbestos Rubber Tape, 1¼ x 3-16, Imported.	.50 "
Asbestos Square Rubber Back.	.45 "
Asbestos Rubber Sheet Packing.	.40 "

Leather Belting. Discount from New List.

Agricultural Leather Belting.	.65 %
Standard.	50 & 5 %
Extra.	50 %
Extra Short Lap "Monarch".	45 %
Cotton Belting.	60 %

Round Belting. New List.

Patent Solid.	45 %
Solid.	50 & 10 %
Twist.	40 & 10 %

Lacing, &c.

Best Tanned Lace, in Sides, per sq. foot.	\$0.18
Gilt Edge Rawhide Lace, in Sides, per sq. foot.	.21
Tanned Lace, Cut.	.60 %
Gilt Edge Rawhide Lace, Cut.	60 %

Cotton Waste.

Best White.	\$0.08 ½
No. 2.	.08
Extra Colored.	.06 ½
No. 1 Colored.	.06
No. 2 Colored.	.06 ½

Hose Brass Goods and Sundries.

Lace Cutters.	\$0.40 net
Standard Belt Fasteners.	25 %

Blake's Belt Studs.....	40&5 %
Oval Point Belt Hooks.....	75 %
Copper Rivets and Burrs.....	45 %
Smith Belt Fasteners.....	30 %
Round Belt Couplings.....	50&10 %
Belt Punches.....	20 %
Belt Awns.....	\$0.40 net.
Belt Cutters, Leather.....	25.00 "
Belt Cutters, Rubber.....	25.00 "
Hose Couplings, 1/4 inch, per doz.....	80 "
Hose Clamps.....	60&10 %
Hose Pipes, Screw Tip and Cock, large end.....	60&10 %

Lawn Sprinklers.....	50&10 %
Gem Nozzles, per doz.....	\$5.00
Magic Nozzles, 1/4 inch.....	\$12.00
Magic Nozzles, 1 inch, per doz.....	15.00
Fuller Nozzles.....	33&5 %
Hose Strap Fasteners, 1/4 to 1 inch, each.....	\$0.40
Hose Strap Fasteners, 1 1/4 to 1 1/2 inch, each.....	.60
Hose Straps.....	45&5 %
Hair Felt, 1/4 inch, cut, per square foot.....	\$0.06
Hair Felt, 1/2 inch, cut, per square foot.....	.07
Hair Felt, 1 inch, cut, per square foot.....	.07
Empire Tin Elevator Buckets.....	.60
Empire Iron Elevator Buckets.....	.40
Acme Steel Cups.....	.35
Excelsior Mill Elevator Buckets.....	.50
Avery Seamless.....	40&10 %
Corrugated Bolts, 1/4 to 1/2 inch, per 1000.....	\$5.50
Corrugated Bolts, 1 inch, per 1000.....	8.50

Hose Reels.	
Holly Hose Reel, No. 1.....	\$2.75
Holly Hose Reel, No. 2.....	3.50
No. 1 Success.....	1.10
No. 2 Success.....	1.60
Eureka Folding, No. 1.....	1.10
Eureka Folding, No. 2.....	1.60
Eureka Fixed Arms, No. 1.....	1.00
Imperial.....	.75
Gauge Glass Washers, per doz.....	.15
Rubber Cement.....	40&5 %
Leather Cement, per lb.....	\$0.60

Water Brass Goods.	
Compression Work.....	.60 %
Key Work, rough.....	.60 %
Key Work, finished.....	.55 %
Cast Iron Sinks, painted.....	.67 1/2 %
Steel Sinks, painted.....	.37 1/2 %
Steel Sinks, galvanized.....	50&5 %
Globe Ventilators.....	60&10 %
Star Hydrant and Sheet Washers.....	60&10 %
Crescent Hydrants and Street Wash.....	.70 %

Wood Pumps, Chain Pumps, &c.	
Wood Pumps, extra finish, revised list.....	.60 %
Chain Pump Material.....	.60 %
Chain.....	\$0.05
Victor's New Patent Bucket, per doz.....	1.00
Tubing, per foot.....	.0234

Iron Pumps.	
Cistern Pumps (Fig. 200).....	.60 %
Pitchoer Pumps (Fig. 205 1/2).....	.75 %
Schränkel's Piston Rod (Fig. 838).....	.25 %
Set Length Lift Pumps.....	60&10 %
Force Pumps.....	.60 %
Deep Well Standard.....	.50 %
Double Acting Daisy Pumps.....	.45 %
Iron Cylinders, except below.....	.75&10 %
Brass Lined and Brass Body Cylinders.....	.70&10 %
Cylinders (Fig. 615).....	.60 %
Cylinders (Fig. 621).....	.50 %

Foot Valves.	
Foot Valves, Figs. 371, 472, 473, 1 1/4 inch and smaller.....	60&10 %
2-inch and larger.....	50&10 %
Foot and Check Valves, Figs. 474, 475, 476, 50&10 %	
Foot and Check Valves, Fig. 607.....	.60 %
Foot and Check Valves, Fig. 760.....	.70 %
Foot and Check Valves, Fig. 742.....	.60 %
Globe Strainers.....	.40 %
Globe Strainers, Figs. 658, 659, 660.....	60&10 %
Floot Valves.....	.50 %
Copper Floots, each.....	\$0.65
Pump Rod, Drawn Steel, Special, 3/4 and 7-16, plain.....	.0334
Pump Rod, Drawn Steel, Special, galvanized, 3/4 and 7-16.....	.04 1/4
Rod Couplings, plain, per lb.....	\$0.15
Rod Couplings, galvanized, per lb.....	.18
Brass Rod Couplings, per lb.....	40& net
Gas Pipe Couplings and Guides.....	.40 %

Well Points.	
Washer Points.....	.70 %
Radial Center.....	50&10 %
Brass Jacket Points, 1 1/4 x 2 1/2 x 80 hole, Nos. 50 or 60, Gauge, per doz.....	\$7.50 net
Brass Jacket Points, balance of list.....	.75 %
Drive Heads, Iron and Steel.....	.25 %
Malleable Caps.....	.50 %
Drive Head, Hardwood Caps.....	.25 %
Goose Necks, Air Chambers and Cocks.....	.50 %

Windmill Pumps.	
Windmill Lift Standards, except Fig. 762.....	.60 %
Figure 762, No. 3; 1 1/4 x 6.....	\$2.25
Figure 762, No. 4; 1 1/4 x 6.....	2.50
Figure 762, No. 5; 1 1/4 x 6.....	2.75
Figure 762, No. 4; 2 x 10.....	2.75
Figure 762, No. 5; 2 x 10.....	3.00
Figure 760, Adj. Stroke (for Tubular Wells).....	3.25

Windmill Force Standards, except Figures 422 and 423.....	.60 %
Figures 422 and 423.....	.65 %
3-Way Pumps.....	.60 %

3-Way Pumps, Figure 730, 6 inch, \$7.50; 10 inch.....	\$8.00
3-Way Pumps, Figure 791, 6 inch, \$7.00; 10 inch.....	\$7.50
3-Way Pumps, Figure 800; 1 1/4 x 6 inch 6.75	

W. M. Working Heads.....	.40 %
W. M. Heads, Figure 447, 60&10 %; 448.....	40&10 %
Double-Acting W. M. Pumps, Figs. 638 & 639.....	40 %
Syphon Working Pumps, Figs. 514 and 776.....	.40 %
Well Pump Head and Deep Well Cylinder.....	.30 %

Hand and House Force Pumps.	
Hand Force Pumps, Iron.....	.50 %
Hand Force Pumps, Brass.....	.45 %

Vertical Power Piston Pump.....	40 %
Globe Pump.....	.25 %
Single-Acting House Force Pump, Iron.....	.50 %
Single-Acting House Force Pump, Brass.....	.50 %
Double-Acting House Force Pump, Iron.....	.45 %
Double-Acting House Force Pump, Brass.....	.40 %

Railroad and Ship Pumps.	
Star R. R. Force Pump.....	40 %
Meteor.....	45 %
Counter Shafts.....	.25 %
Cornish Head.....	.30 %
Deep Well Cylinders.....	.30 %
Alert Double-Acting Pump.....	.50 %
Challenge and Monitor Pumps.....	.35 %
Alert Double-Acting Power Pump.....	.40 %
Challenge Double-Acting Pulley Pumps.....	.30 %
Brass Two-Cylinder Ship Pumps.....	.30 %
Two-Cylinder Pumps, Iron.....	.30 %
Deluge Bilge Pumps. See circular.....	.30 %
Hand Boiler Feed Pump.....	.40 %
Boiler Feed Pumps, except Figure 709.....	.30 %
Figure 709.....	.25 %

Rotary Pumps, &c.	
Hand Rotary Pump.....	.40 %
Hand Rotary Barrel Pump.....	.35 %
Power Rotary Pump.....	.40 %
Power Geared Rotary Pump.....	.25 %
Portable Garden Pumps.....	.50 %
Portable Force Pumps.....	.35 %
Union Hand Engines. Special.....	.40 %
Pacific Portable Force Pump.....	.40 %
Brass Air Pump.....	.40 %
Plumbers' Force Pump and Drip Pump.....	.50 %
Air Pump.....	.30 %
Beer Pump and and Test Pump.....	.50 %
Hydraulic Rams.....	.40 %

Bells, &c.	
Meneely Pure Bell Metal Bells, per lb.....	28¢
Hangings, discount.....	.20 %
Steel Amalgam Bells, Figure 738.....	70&10 %
Steel Amalgam Church Bells, Figure 838.....	40&10 %
Wrought-Iron Jack Screws.....	70&10 %
Cast-Iron Jack Screws, 3 x 2 1/2.....	\$1.75 net
Wrought-Iron and Cast-Iron Cider Press Screws.....	.50 %
Pump Repairs.....	.50 %

Exports.

PER SHIP WANDERING JEW, FEBRUARY 20, 1889, FOR MELBOURNE, AUSTRALIA.

By Healy & Earl.—5 cases Sawmills, 4 cases Grain Mills, 48 dozen Axes.

By J. W. Horton & Son.—264 dozen Axe and Pick Handles.

By Holmes, Booth & Haydens.—16 packages Lamp Goods.

By Reed & Barton.—464 pounds Plated-Ware.

By Lalanc & Grosjean Mfg. Company.—695 pounds Household Utensils.

By Rogers Locomotive and Machine Works.—16,422 pounds Locomotive Machinery.

By G. P. Patterson.—2766 pounds Cordage, 589 pounds Cordage.

By Simpson, Hall, Miller & Co.—11 cases Plated-Ware.

By Collins Company.—100 dozen Edge Tools.

By Parker & Whipple Company.—105 pounds Clocks, 105 Clocks.

By W. K. Freeman.—300 dozen Axe Handles, 100 cases Axe Grease.

By Welsh & Lea.—10 cases Iron Bolts, 1 case Carpet Sweepers.

By Waterbury Clock Company.—58 cases Clocks, 3 cases Clocks.

By Ansonia Clock Company.—91 boxes Clocks, 40 boxes Clocks.

By Yale & Towne Mfg. Company.—856 pounds Locks.

By Edward Miller & Co.—40 packages Lamp Goods, 33 packages Lamp Goods.

By New Haven Clock Company.—288 Clocks.

By Rand Drill Company.—4 boxes Drilling Machine.

By W. & B. Douglas.—5 boxes, 2 cases Pumps.

By Meriden Britannia Company.—9 packages Plated-Ware, 20 packages Plated-Ware, 3 boxes Plated-Ware, 3 boxes Plated-Ware.

By Russell & Erwin Mfg. Company.—11 cases Hardware, 42 packages Hardware.

By Winchester Repeating Arms Company.—2 cases Guns, 1 case Tools, 22,600 Cartridges.

By Manhattan Brass Company.—20 cases Lampware, 42 barrels Lampware, 2 cases Brass Goods.

By H. W. Johns Mfg. Company.—1014 pounds Asbestos Packing, 198 gallons Varnish, 100 gallons Liquid Dryer, 560 pounds Asbestos Packing.

By Strong & Trowbridge.—5 crates Stoves, 4 cases Whetstones, 6 packages Grindstone and Parts, 1 case Lead Pencils, 1 case Forks.

By Woodhouse & Stortz.—20 dozen Edge Tools, 1085 pounds Hardware, 202 pounds Electro-Plated Ware.

By F. B. Wheeler & Co.—27,000 pounds School Slates, 6 sets Harness, 8 1/2 dozen Hardware, 6 dozen Axes, 8 cases Hardware.

By Hiley, Doubleday & Co.—1 case Hardware, 224 pounds Glue, 4 1-6 gross Glue.

By Mailler & Queveau.—3 cases Hardware, 600 cases School Slates.

By Arkell & Douglas.—77 cases Handles, 120 dozen Handles, 2 cases Spokes, 3 cases Castings, 23 dozen Locks, 8 packages Hardware, 2 barrels Castings, 69 cases Slates, 5 1/4 dozen

Velocipedes, 200 boxes Clothes Pins, 36 dozen Towel Rollers, 7 boxes Shade Rollers, 23 dozen Lampware, 2 boxes Hoses, 2 boxes Tools, 1 dozen Clamps, 1 box Harness, 4 dozen Hammocks, 13 boxes Axes, 27 boxes Hardware, 3000 pounds Nails, 12 dozen Hoes, 48 dozen Lamp Goods, 1 box Handles, 1 case Drills, 2 cases Cages, 1/2 dozen Scales, 5 cases Hardware, 358 pounds Cord, 27 dozen Saws, 25 dozen Staples, 600 pounds Nails, 7 dozen Locks, 2 cases Tools, 500 feet Hose, 3826 pounds Bolts, 12 cases Handles, 6 nests Tubs, 6 nests Pails, 5 boxes Tools, 2 cases Hardware, 3 cases Axes, 6 dozen Saws, 7 packages Hardware, 3 dozen Tacks, 12 dozen Wire Goods, 1 case Wire Cord, 1/2 gross Axle Grease, 2 cases Hardware, 3 cases Wrenches 2 cases Wire Goods, 3 cases Tinware, 6 dozen Oil Stoves, 2 cases Tools, 14 Ranges and 1 box Parts, 100 boxes Clothes Pins, 12 dozen Hoes, 270 pounds Tools, 3 dozen Braces, 12 1/2 dozen Braces, 4 dozen Axes, 111 pounds Wagon Springs, 1 case Bolt Cutters, 16 dozen Stump Joints, 18 gross Hardware, 1/4 gross Shoe Blacking, 7 boxes Tools, 2 crates Mail Boxes, 1 case Chalk, 14 Oil Stoves, 6 dozen Bench Screws, 1 case Bolts, 3 dozen Axes, 6 dozen Hoes, 2 dozen Choppers, 2 cases Bolts, 2 cases Carriage-Ware, 5 cases Hubs, 1 case Whiffletree, 3 Pumps, 3 dozen Sinks, 1/2 dozen Lawn Mowers, 13 boxes Tools, 4 packages Hardware, 10 cases Axes, 4 cases Tools, 96 dozen Bolts, 1 dozen Grindstones, 1 crate Carriage-Ware, 2 cases Springs, 1 case Bolts, 3 cases Carriage-Ware, 1 case Drills, 1 case Bolts, 1 case Tools, 90 dozen Whips.

By W. H. Crossman & Bro.—125,000 Blasting Caps, 30 dozen Axes, 1 box Stove Parts, 12 dozen Traps, 34 dozen Whisk Brooms, 14 cases Hardware, 310 Clocks, 3 gross Lead Pencils, 27 dozen Wrenches, 12 dozen Hammers, 2 dozen Meat Choppers, 32 cases Nails, 39 dozen Traps, 24 dozen Thermometers, 16 dozen Stencils, 6 dozen Oilers, 18 dozen Curry Combs, 1 case Tools, 1 1/2 dozen Mallets, 1/2 dozen Emery Grinders, 16 dozen Hardware, 1 dozen Meat Choppers, 6 dozen Sives, 10 dozen Reflectors, 1/2 dozen Wringers, 20 cases Hardware, 24 dozen spools Wire, 5 dozen Wooden Faucets, 28 Churns, 1 barrel Lamp Goods, 6 dozen Mattocks, 3300 pounds Nails, 5 gross Shade Rollers, 10,000 Paper Shells, 12,000 Loaded Shot Shells, 123 dozen Axes, 16 dozen Axes, 2 gross Whips, 15 dozen Padlocks, 66 dozen Axes, 12 dozen Hoes, 374 dozen Handles, 228 pounds Tacks, 2 dozen Axes, 2 packages Blocks, 2 cases Tools, 48 pairs Skates, 4 dozen Axes, 1 box Hardware, 32 packages Pumps and Parts, 7 Clocks, 1 box Hardware, 1 case Hardware, 5 1/2 dozen Iron Wagons, 3 cases Hardware, 2 1/2 gross Glue, 1 box Hardware.

By R. W. Forbes & Son.—3500 pounds Nails, 1 dozen Tubs, 21 dozen Forks, 12 dozen Brush Holders, 5 dozen Hinges, 1 dozen Saws, 1 case Stamped-Ware, 4 gross Rollers, 2 packages Lampware, 35 1/2 dozen Rakes, 3 dozen Lemon Squeezers, 12 packages Hardware, 11 boxes Wringers, 1 case Hardware, 2 packages Hardware, 2 boxes Hardware, 19 packages Hardware, 4 dozen Glue, 131 sets Axes, 3583 pounds Carriage Bolts, 40 packages Hardware, 36 dozen Forks, 4 packages Lawn Mowers, 6 packages Plated-Ware, 11 cases Wringers.

By R. W. Cameron & Co.—7 cases Saws, 6 cases Axes, 15 cases Axes, 54 cases Axes, 1 box Hardware, 4 packages Drill Machinery, 15 Axes, 2 cases Malleables, 10 cases Spokes, 1 case Pick Handles, 33 Bundles Rough Handles, 1 crate Tills, 6 cases Hardware, 2 barrels Chimneys, 3 cases Spring Rollers, 3 cases Whip Handles, 6 cases Velocipedes, 120,000 Slates, 1 box Hardware, 15 boxes Bolts.

By A. Field & Co.—15 gross Hinges, 3 gross Hooks, 3 1/2 dozen Locks, 650 pounds Nails, 2 dozen Wringers, 3 dozen Hammers, 18 dozen Axle Grease, 2 gross Varnish, 3 dozen Brushes, 1 1/2 gross Axle Grease, 2 dozen Tools, 3 dozen Harness-Ware, 7 dozen Axes, 34,000 Bolts, 13 dozen Hardware, 18 dozen Axle Grease, 1 gross Varnish, 1 1/2 gross Harness Dressing, 11 1/2 gross Hardware, 12 dozen Whips, 2 gross Harness Dress, 5 dozen Harness Parts, 6 dozen Brushes, 60 pounds Rivets, 122 dozen Harness-Ware, 3 dozen Harness-Ware, 13 1/2 dozen Harness-Ware, 3 dozen Harness-Ware, 3 cases Axle Grease.

By McLean Bros. & Rigg.—16 Dies, 4 dozen Miter Boxes, 18 dozen Plumbs and Levels, 1 1/2 dozen Chain Wrenches, 21 dozen Coffee Mills, 1 dozen Sad Irons, 8 dozen Meat Choppers, 11 cases Gate Latches, &c., 3 dozen Lamp Reflectors, 180 dozen Burners, 2 1/2 dozen Boring Machines, 83 dozen Locks, 12 dozen Saw Sets, 18 dozen Lamp Goods, 9 dozen Guns, 14,000 Cartridges, 24 Churns, 27 dozen Brackets, 300 dozen Locks, 6 dozen Molasses Gates, 44,000 Bolts, 11 packages Lampware, 1 case Sewing Machine Parts, 110 dozen Hay Forks, 24 dozen Gate Latches, 150 dozen Brackets, 1 dozen Miter Boxes, 39 dozen Wrenches, 10 Stoves and Parts, 7 dozen Saws, 1/2 dozen Guns, 1/2 dozen Wheel-

barrows, 1 dozen Wringers, 10 dozen Axes, 1 dozen Knives, 60 sets Axes, 1 dozen Spirit Levels.

By Morris, Strouse & Co.—1½ dozen Wringers, 12 dozen Mop Sticks, 68 dozen Edge Tools, 14 gross Kitchen Tools, 36 dozen Iron Tacks, 92 dozen Axes, 30 dozen Hardware, 6 dozen Grindstones and Fixtures, 46 dozen Mouse Traps, 3 gross Tools, 6 gross Shade Rollers, 103 dozen Tools, 1 dozen Money Drawers, 70 dozen Tools, 3 gross Brooms.

By Coombs, Crosby & Eddy.—2400 pounds Nails, 2 Printing Presses, 1 case House-Furnishing Goods, 92 dozen Handles, 2 dozen Wringers, 5 dozen Rakes, 1386 pounds Screws, 6 dozen House-Furnishing Goods.

By H. W. Peabody & Co.—44,803 pounds Barb Wire, 5 packages Hammocks, 2000 pounds Nails.

PER SCHOONER SEVERN, MARCH 2, 1889, FOR EAST LONDON.

By Carey, Yale & Lambert.—1200 feet Sash Cord, 1350 pounds Sash Weights.

By W. H. Crossman & Bro.—62 cases Plow Parts.

By Arkell & Douglas.—40 dozen Axes, 6 cases Agricultural Implements, 1 case Shares, 15 cases Plows, 1 case Slate Pencils, 125 kegs Nails, 230 cases Agricultural Implements, 40 dozen Axes, 39 cases Agricultural Implements, 198 cases Agricultural Implements, 1 barrel Sash Cord, 30 dozen Handles, 50 dozen Axes, 7700 pounds Sash Weights, 20 Pumps, 8 cases Scales, 26 cases Plows, 1½ dozen Clocks, 64 cases Plows, 4 cases Sewing Machines, 60 dozen Picks, 5 Carriages, 26 dozen Picks, 5 Carriages, 4 cases Axes, 6 cases Spokes, 12 dozen Picks, 1 case Hay Forks, 1 case Slate Pencils, 1 case Carriage-Ware, 1 bale Sash Cord, 760 pounds Sash Weights, 3 Carriages, 1 Carriage, 15 cases Plows, 10 kegs Nails, 20,000 pounds Wire, 760 pounds Sash Weights, 1 Carriage, ½ dozen Hardware, 1 dozen Churns, 1½ dozen Saws, 6 dozen Brooms, 1 case Hardware, 3 dozen Tools, 1 case Cages, 2 dozen Wheels, 3 cases Varnish, 100 pounds Oil Stones, 1 case Planes, 6 packages Mills, ¼ dozen Mangles, 1 dozen Wringers, ½ dozen Washers, ¾ dozen Churns, 37 packages Rims, &c.

By W. H. Crossman & Bro.—4 dozen Axes, 300 dozen Handles, 48 dozen Handles, ¼ dozen Braces.

No Trusts for Kansas.—The Kansas Senate has passed the bill to prevent trusts, combinations and pools, and it becomes a law. It provides that all arrangements, contracts, agreements, trusts or combinations between persons or corporations, made with a view or which tend to prevent full and free competition in the importation or transportation of articles imported into that State, or in the product, manufacture and sale of domestic raw materials, or for the use of money, or to fix attorney's fees, and all arrangements, trusts or combinations between persons or corporations designed or which tend to advance the cost to the consumer of any such articles, or which tend to advance or control the rate of interest for the loan or use of money to the borrower, are declared to be against the public policy, unlawful and void. The bill provides a penalty of imprisonment and a fine not to exceed \$1000 for violation.

The trial of the compound locomotive Pennsylvania was made a few days since in the Altoona yards. This engine was built after designs by F. W. Webb, mechanical engineer of the London and Northwestern Railroad, at the works of Beyer, Peacock & Co., Manchester, England, and was assembled at the Altoona shops. In this engine the inventor endeavored not only to secure the economical advantages of the compound principle, but also to obtain the adhesion of four drivers without using parallel rods. Although the test was satisfactory, there are some improvements needed before the Pennsylvania company will order more engines to be built after the same pattern.

Contracts aggregating \$600,000 have been let for the construction of the Ohio connecting railway bridge across the Ohio River at Brunot's Island, a few miles below Pittsburgh. The successful bidders

are Pittsburgh firms, and they have orders to commence work at once. The building of the bridge will be under the supervision of Chief Engineer M. J. Becker, of the Pittsburgh, Cincinnati and St. Louis Railway. It is expected to be finished in about a year. The bridge proper will be a mile long, approached by an iron viaduct 700 feet in length.

The Reading Failure.

The suspension of the Reading Iron Works, one of the largest concerns of the kind in Pennsylvania, has been announced. The works are located in Reading, and are owned by a stock company. The company have issued \$250,000 first mortgage and \$150,000 second mortgage bonds. In addition to this, there is \$500,000 of preferred stock and \$500,000 of common. The floating debt is said to be heavy. About 2500 men are employed in the works at Reading. There are three rolling mills, a steam forge, a large machine shop and foundry, a rail works, and one of the largest pipe mills in the country.

The works were originally owned by Seytert, McManus & Co. The firm failed some years ago, and the creditors then organized and decided to continue the business under the title of the Reading Iron Works. John Penn Brock was elected president and Edward W. Coit general manager. Mr. Brock died about eight years ago, and was succeeded by Mr. Coit, who has since been the executive head of the company. Shortly after the organization of the company there was some trouble caused by business depression, and an extension was asked for and granted. A portion of the indebtedness was paid in cash and a portion in preferred stock. The company continued to do business after the settlement was made, and, under Mr. Coit's management, enjoyed a period of prosperity; but dullness in the trade and shrinkage in prices finally overwhelmed it. A meeting of the creditors will be held in Philadelphia on Thursday.

Later dispatches announce that the rolling mills at Naomi and Gibraltar, near Reading, the greater portion of whose products were received by the Reading Iron Works, closed down for want of orders, and the Keystone Rolling Mill, at Reading, whose entire product is taken by the Reading Iron Works, also shut down.

Orders have been issued by the Reading Railroad Company stopping the shipment to the Reading Iron Works of coal, lime, ore, iron, &c, from the mines, furnaces and kilns controlled by the railway company. The works were running as usual on Wednesday.

An Important Ruling in Commercial Law.

The opinion handed down on the 5th inst. by the United States Supreme Court in the case of the Liverpool and Great Western Steamship Company is one of special interest to the world. The question involved was whether a steamship company can limit its liability for its own negligence. The decision of the court is that it cannot. In this case the company had stipulated in its bills of lading that it should not be liable for the negligence, default or error in judgment of the navigators of the vessel. The vessel was stranded on the coast of Wales. On the trial in the lower court it was found that the stranding was due to negligence on the part of the vessel's officers. The company then claimed that even in that case it was exempt from liability by the express stipulation in its bills of lading. The Supreme Court holds that the stipulation was not valid in law, for the reason that

no steamship company nor any other common carrier has any right or power make such a condition. The court says:

No public carrier is permitted by law to stipulate for an exemption from the consequences of negligence. The fundamental principle upon which the law of common carriers was established was to secure the utmost care and diligence in the performance of their duties. A carrier who stipulates not to be bound to the exercise of care and diligence seeks to put off the essential duties of his employment. Nor can those duties be waived in respect of the servants of the common carrier, especially where the latter is incapable of acting except through others. To admit such a proposition as that the law merely demanded abstract carefulness and diligence in proprietors and stockholders who take no active part in the business would be subversive of the very object of the law.

The court further holds that English law cannot make such a stipulation valid in case of a contract made in this country, for in such case our own law governs. "The fact that the vessel went ashore on the coast of Great Britain is quite immaterial." This decision will have a revolutionary effect on both ocean and land bills of lading. It will make a dead letter of the clause exempting the company from liability for its own negligence.

The Brunot's Island Bridge.—Contracts have been let for the erection of the Ohio connecting railway bridge across the Ohio River, at Brunot's Island, a few miles below Pittsburgh. The contracts amount to \$600,000, and have all been awarded to Pittsburgh parties. The Keystone Bridge Company have the contract for the ironwork. The work will be under the supervision of Chief Engineer M. J. Becker, Pittsburgh, Cincinnati and St. Louis Railway. The bridge will consist of two deck spans, each 121 feet long, over the Chartiers turnpike; eleven deck spans, each 171 feet long over Brunot's Island; two channel spans, one 416 and the other 425 feet long; one span over the Pittsburgh and Western road of 137 feet; two spans over the Fort Wayne yards 150 feet in length each, and one iron viaduct 700 feet long, paralleling and gradually sloping to the grade of the Fort Wayne road. The object in erecting this bridge is to permit the transferring of freight by the Pittsburgh, Cincinnati and St. Louis and the Pittsburgh, Fort Wayne and Chicago Railway lines without having to haul the freight to Pittsburgh, and making the transfer in that city, as is the case at present.

A committee representing 5000 working engineers, members of the five principal stationary engineers' associations in this city and Brooklyn, called on Mayor Grant and filed a protest against the practice, lately begun, of persons contracting to run the boilers and steam apparatus in factories and office buildings and employing incompetent men. They declare that the steam-heating apparatus in many of the public schools is in inefficient hands, and that generally the public is exposed to the danger of being blown up in offices and factories, and even in the streets, whose sidewalks cover many mismanaged boilers. They ask that the law requiring that all boilers be tested and all engineers be licensed after a thorough examination be rigidly enforced.

We understand that two of the rail mills, the Lackawanna Coal and Iron Company and the Edgar Thomson Steel Works, are preparing to add another converter to their plant.

Howard Burden has recently become president of the Hudson River Iron and Ore Company, at Burden, N. Y. We understand that the question of putting up a modern furnace is under consideration by this company.

The Empire Window Screen.

This article is manufactured by C. J. Sherriff & Co., Morristown, N. Y., for whom C. F. Guyon & Co., 99 Readstreet, New York, are agents. A general view of the screen is given in the accompanying illustration, Fig. 1, and a view of the fly-escape is given in Fig. 2. These window screens are made of maple or birch finished in the natural color, and are referred to as strongly as well as neatly constructed. The corners are double-mortised and glued, and not simply wire-nailed, as others. The manufacturers call special attention to the fact that the wire screen is tightened perfectly smooth by having inlaid wood strips nailed into the frames through the

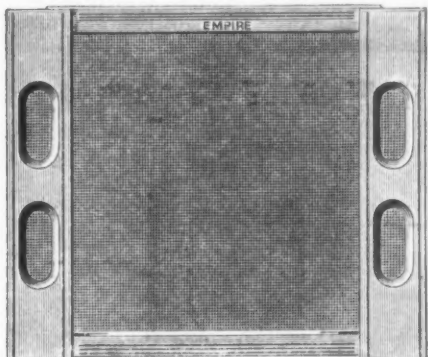


Fig. 1.—The Empire Window Screen.

entire length. The screen is made with an automatic spring adjustment by which the side pieces are pressed outward, making them fit snugly in the window. The screens are also made with metallic slides, the advantage of which, as not effected by dampness, is alluded to. It will be observed that the sides or extensions are paneled, thus admitting more light and air than when made solid. Fig. 2, which represents the fly-escape, shows the outside of the screen as it is placed in the window. It will be seen that above the wire cloth are small openings made by the curves in the upper part of the outside piece of the frame, permitting the flies going up on the wire cloth to pass under

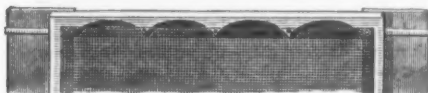


Fig. 2.—Fly-Escape.

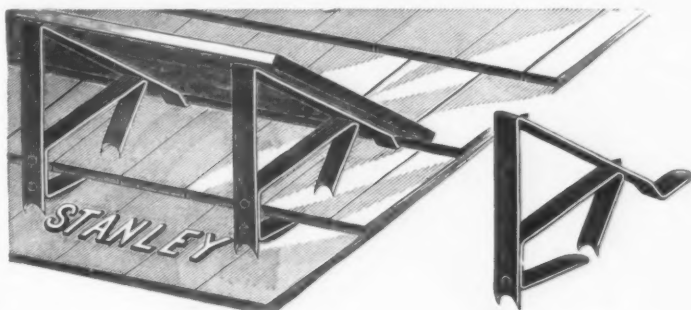
the inner upper piece of the frame, and out through the aperture thus afforded. The point is made that they will thus make their escape from the room, while at the same time there is no likelihood of their entering through these openings.

Stanley's Patent Roofing Bracket.

Our readers will be interested in the illustration we give of a new device for supporting stagings on a roof. Two brackets are represented in position for use, and another one is shown detached. The material used in constructing the bracket is spring steel, and the parts are riveted together at a point near the base. The two beveled ends can be inserted under two layers of shingles, already laid, and any pressure from above will then fasten both sets of prongs firmly on the roof. Steel spurs which project from the upper bearing surface of the bracket will secure the staging boards in place. It is claimed that one dozen per minute can be put in position or released, and that no nail-holes are left in the roof, a further

advantage being that the brackets are always ready for use, and afterward can be dropped from a roof to the ground without fear of breaking. The manufacture of these goods by the Stanley Rule and Level Company, of New Britain, Conn., has recently been undertaken, and they

fore. Besides the drop-forged tack claws recently illustrated by us, J. H. Williams & Co. have made a number of important additions to their line of specialties. Among others we note full lines of standard single and double head set screw wrenches, plain and shoulder thumb-screw



Stanley's Patent Roofing Bracket.

report a good demand for the brackets, as also favorable testimonials from carpenters and painters who have already used them.

The Brock Patent Chain Pipe Wrenches.

J. H. Williams & Co., 9 to 15 Richards street, Brooklyn, N. Y., manufacturers of the Brock patent chain pipe wrenches and of other drop-forged specialties, have recently purchased a testing machine from the well-known house of Tinius Olsen & Co., Philadelphia, for the especial purpose of testing the material used in their chain wrenches, as well as the wrenches themselves after assembling. The capacity of this machine is 30,000 pounds, and its owners inform us that not only will all the

blanks and machine handles. Their already extensive line of engineers' wrenches has been enlarged until it now contains all sizes from $\frac{1}{4}$ inch to 24 inches, the most recent additions being wrenches for 2-inch and 24-inch bolts. They carry a large stock of all their products, having constantly on hand 50,000 wrenches of 90 different kinds and 75 different sizes of thumb-screw blanks.

C. A. Maynard's Handled Planters' and Field Hoes.

Robert Murray, 24 Duane street, New York, sole agent for these goods, is now offering them to the trade. It will be observed from the illustrations given that these hoes are so constructed that the head can be



Fig. 1.—A New Hoe.

Brock chain wrenches hereafter made be carefully tested with this apparatus, but that all the material intended for these goods will be subjected to careful trial in the same manner, and its tensile and transverse strength accurately gauged before it is allowed to be made up into the tools. The latest improvement in the Brock chain wrenches, which are manufactured solely by the above firm, is the patent steel safety link now applied to all the sizes. This invention for attaching the chain to the wrench is covered by United States letters patent No. 377,795, granted February 14, 1888, and is re-

readily detached from the handle, thus greatly facilitating the shipping, reducing freight and making the goods more convenient to store. Fig. 1 shows the hoe complete and ready for use, and Fig. 2 the separate parts of which it is made. It will be seen that the blade is a sheet of steel which is attached to the handle by means of a large-headed bolt which passes through it and enters the ferruled end of the handle, in which it is securely fastened by the keys. The utility of this construction is obvious, and the excellence of the material and workmanship is also referred to by the manufacturers. The



Fig. 2.—Parts of Maynard's Handled Hoes.

garded as a most valuable improvement. The object of this addition is to render it impossible for the chain to break away from the jaws, and the great defect existing in other chain wrenches is thereby avoided. The addition of the safety link does not affect the reversibility of the tool, and all sizes are interchangeable as hereto-

planters' hoes are made with polished or unpolished blades, and the field hoes with polished blades.

The reduction works completed at Deadwood, Dak., two months ago at a cost of \$90,000, were destroyed by fire 1st inst.

Bell's Eave-Trough Hanger.

Messrs. John W. Bell & Co., of Mercer, Pa., are directing the attention of the trade to what is known as Bell's eave-trough hanger, made of a single piece of galvanized wire. The statement is made that this hanger will not corrode, nor cause the trough to rust. It can be fast-

to it two uprights of the same material. Secured to these uprights is an adjustable picket-rest with movable gauge. The iron knife bar, or lever, which is provided with a wooden handle, is attached at its lower extremity to the base by means of a hinged joint, which serves as a fulcrum. The manufacturers state that the knife-holder is adjustable upon the knife-bar, and causes the

size has a range of from $\frac{1}{4}$ to 2 inches, and weighs complete 12 pounds. The strength of this pipe-vise, as well as the low price at which it is sold, are also alluded to.

Reading Hardware Company.

From a late issue of the Reading (Pa.) *Times* we take the following description of the new works of the Reading Hardware Company, located in that city, and which are fast approaching completion:

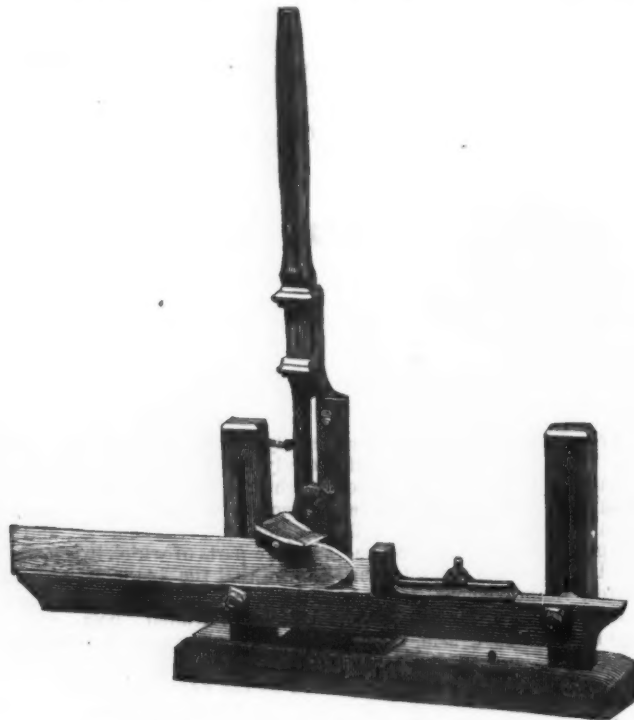
The finishing touches are now being given to the new buildings of the Reading Hardware Company by the carpenters, and by the middle of April the remembrance that the destruction of the old works was the most serious conflagration in the history of Reading will be drowned in the hum of new and improved machinery, and the noise of 700 busy workmen.



The Bell Eave-Trough Hanger as Put Up for Shipment.

ened to the trough while it is on the ground, the operation consisting simply of closing down the hook with a pair of 8-inch gas plyers. When the trough is elevated to its place the hangers may be bent and adjusted to the pitch of the roof in order to give the trough the proper fall. This hanger is claimed to form a complete brace and support to the trough, and to hold it not alone in its proper position but in shape as well. It is easily and quickly adjusted, and is meeting with a great deal

knife to stand at right angles to the bar. The knife is attached to the lever by screws, clearly shown in the cut. When operating the machine, it is only necessary to place a picket on the rest, as indicated in the engraving, push the lever forward, and the work is done. The lever is thrown back into its original position by a spring suitably placed. The makers state that, when desired, they furnish with the machine a miter attachment designed for cutting or pointing ends of shingles. When



Hand Picket Pointer, Made by I. S. Spencer's Sons.

of favor. The hangers are put up in packages of two dozen each, the engraving presented herewith showing the appearance of a bundle of hangers ready for shipment. The firm state that their sales last year were double those of any other season, and the prospects for 1889 are promising.

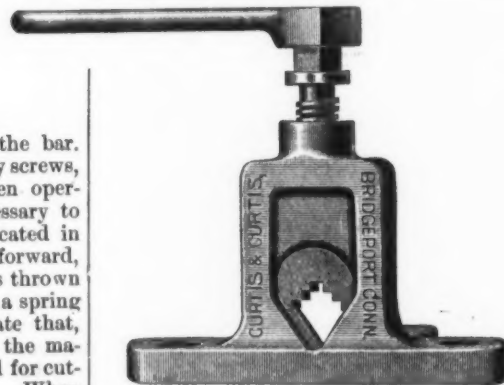
Hand Picket Pointer.

Messrs. I. S. Spencer's Sons, of Guilford, Conn., are introducing to the building trades a device for shaping the tops of pickets, a general view of the machine being afforded by means of the accompanying illustration. It is known as a hand picket pointer, and is provided with a base made of hard wood, having firmly fastened

this attachment is used, it is fastened to the picket-rest in the place of the gauge.

A New Pipe-Vise.

Curtis & Curtis, manufacturers of the Forbes patent die-stock and pipe cutting and threading machinery, Bridgeport, Conn., are putting on the market the pipe-vise which is illustrated herewith. It is described as made of the best malleable iron and steel. The lightness of the contrivance is referred to by the manufacturers as making it very convenient for carrying in the tool-chest or pocket. The smaller size, which is represented in the cut, weighs complete 2 $\frac{1}{2}$ pounds, and has a range of from $\frac{1}{4}$ to $\frac{3}{4}$ inch inclusive. The larger



A New Pipe Vise.

Bins and boxes are now being put in the storehouse, which is that portion on Sixth street and extending back almost to and connected with the factory buildings by an iron bridge, for the storage of the various kinds of manufactured articles. The whole arrangement is being made in accordance with the most modern plans adopted by similar establishments, with original modifications and improvements by the proprietors of the works. In the warehouse five floors are utilized, and by the use of two Stokes & Parrish elevators the goods are quickly handled from one floor to another. The elevators are run by a pressure valve with steam from the factory boilers. In the cellar, which has one of the best cement floors, the heavy goods are principally kept. On the first floor is the office and shipping department. When completed the office will be inclosed by a railing and glass partitions, and will be light and roomy, much to the pleasure and satisfaction of the score of bookkeepers. It is supplied with finely finished ash and walnut desks, and two stenographers are kept busy receiving the dictation of many letters daily. The second floor is where the fine bronze plated metal and brass ware is stored. On the fourth the packing is done, and on the fifth the paper boxes are stored. Over 100,000 of these were in the building when it was burned down. The company will hereafter manufacture their own boxes.

The warehouse and factory are connected by a covered iron bridge made by Cofrode & Saylor, of Pottstown, and as the goods are finished in the factory they are at once sent across the bridge to the proper wareroom. The factory and japan house, which is the department where the danger from fire usually exists, has been so constructed in the new building as to make a conflagration through it only a possibility. It is of the safest and best design, with the fire on the ground floor and the ovens on the second. The factory is also supplied with an immense vault, extending from the first to the fourth floors, in which fine tools, dies, &c., are to be stored. The company suffered a heavy loss from the destruction of fine tools at the time of the fire. The floors are all of double thickness, and all the doors and windows are covered with a casing of tin as an additional precaution against fire. An important precaution was also taken in the boiler-house by the building of a belt well, which would prevent a fire in the main shaft from spreading. The new buildings will be completed probably by the 1st of April, and when all departments are in full operation again between 700 and 800 hands will be employed.

The new French cable to Hayti, San Domingo and cities in Venezuela is now open for service.

CURRENT HARDWARE PRICES.

MARCH 6, 1889.

Notes.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

Ammunition.

Caps, Percussion, 1000—	
Hicks & Goldmark's	
F. L. Waterproof, 1-10's	50¢
E. B. Trimm'd Edge, 1-10's	25¢
E. B. Grnd. Edge, Cent. Fire	75¢
Double Waterproof, 1-10's	1.10
Musket Waterproof, 1-10's	50¢
G. D.	28¢
S. B.	30¢

Union Metallic Cartridge Co.	
F. C. Trimm'd	50¢
F. L. Ground	25¢
Cent. Fire Ground	70¢
Dbl. Waterproof, 1-10's	1.10
Dbl. Waterproof, in 1-10's	1.10
S. B. Genuine Imp. ortd.	45¢
Eley's E. B.	54¢
Eley's D Waterproof, Central Fire	1.00

Cartridges.	
Rim Fire Cartridges	50¢ & 52¢
Rim Fire Military	15¢ & 2¢
Cent. Fire, Pistol and Rifle	15¢ & 2¢
Cent. Fire, Military and Sporting	15¢ & 2¢
Blank Cartridges, except 22 and 32 cal., additional 10% on above discounts.	
Blank Cartridges, 22 cal.	1.75
Blank Cartridges, 32 cal.	3.50
Primed Shells and Bullets	15¢ & 2¢
B. B. Caps, Round Ball, 1.75	2¢
B. B. Caps, Con. Ball, Swgd., 2.00	2¢

Primers.	
Berdan Primers, 1.00	2¢
B. L. Caps (for Sturtevant Shells) 1.00	2¢
All other Primers, 1.20	2¢

Shells.	
First quality, 4, 8, 10 and 12 gauge	25¢ & 10¢
First quality, 14, 16 and 20 gauge	10¢
Star, Club, Rival and Climax brands, 10 and 12 gauge	35¢ & 10¢
Star, Club, Rival and Climax brands, 14, 16 and 20 gauge	35¢ & 10¢
Setbold's Comb. Shot Shells	15¢ & 2¢
Brass Shot Shells, 1st quality	60¢ & 2¢
Brass Shot Shells, Club, Rival, Climax	65¢ & 2¢
I. X. L. 10 and 12 gauge	40¢ & 2¢
"Special" 16 gauge	30¢ & 2¢
"Special" 10 and 12 gauge	40¢ & 2¢
Fowler's Pat.	3.25

Shells Loaded—	
A. M. Co. List No. 19, 1887	20¢ & 10¢
Wads—	
U. M. C. & W. R. A.—B. E., 11 up, 2.00	
U. M. C. & W. R. A.—B. E., 9.810	2.30
U. M. C. & W. R. A.—B. E., 7.88	2.60
U. M. C. & W. R. A.—P. E., 11 up, 3.10	
U. M. C. & W. R. A.—P. E., 9.810	4.00
U. M. C. & W. R. A.—P. E., 7.88	4.90
Eley's B. E., 11 up	1.75
Eley's P. E., 11 up	2.80

Anvils.	
Eagle Anvil, 10" x 10"	20¢ & 20¢
Peter Wright's	94¢
Armstrong's Mouse Hole	84¢
Armstrong's Mouse Hole, Extra	1.14
Trenton	94¢
Wilkinson's	94¢
J. & Riley Carr, Pat. Solid	1.14
Moore & Barnes Mfg. Co.	33¢

Anvil Vise and Drill—	
Miller Falls Co., 18.00	20¢
Cheney Anvil and Vise	25¢
Allen Anvil and Vise	45¢, dis 40¢ & 10¢

Apple Parers—	
Advance	50¢ & 4.75
Antim Combination	50¢ & 5.50
Baldwin	50¢ & 5.25
Champion	50¢ & 7.25
Eureka, 1888	each 17.00
Family Bay State	50¢ & 12.00
Gem	50¢ & 5.25
Gold Medal	50¢ & 4.00
Hudson's New '88	50¢ & 3.75
Ideal	50¢ & 4.75
Improved Bay State	50¢ & 30.00
Little Star	50¢ & 5.00
Monarch	50¢ & 13.50
New Lightning	50¢ & 5.50
Orion	50¢ & 4.00
Penn.	50¢ & 4.00
Perfection	50¢ & 4.00
Pomona	50¢ & 4.00
Rocking Table	50¢ & 6.00
Turntable	50¢ & 4.50
Victor	50¢ & 13.50
Waverly	50¢ & 4.50
White Mountain	50¢ & 4.50
72	50¢ & 4.25
76	50¢ & 5.75
78	50¢ & 6.50

Augers and Bits—	
Douglas Mfg. Co.	
Wm. A. Ives & Co.	
Humphreysville Mfg. Co.	70¢
French, Swift & Co. (F. H. Beecher)	
Cook's, Douglas Mfg. Co.	55¢
Cook's, N. H. Copper Co. 50¢ & 10¢ & 50¢ & 10¢	
Yes' Circular Lip	60¢
Patent Solid Head	60¢
C. E. Jennings & Co., No. 10, extension lip	40¢
C. E. Jennings & Co., No. 30	60¢
C. E. Jennings & Co., Auger Bits, 3/4 set, 3/4 quarters, No. 5, 8; No. 30, 3/4 set, 3/4 quarters	20¢
Lewis' Patent Single Twist	25¢
Jennings' Augers and Bits	25¢
Imitation Jennings' Bits	60¢ & 60¢
Pugh's Black	20¢
Car Bits	50¢ & 10¢
L. Hommedieu Car Bits	15¢ & 10¢
Forester Pat. Aug Bits	10¢

Hollow Augers—

Ives' French, Swift & Co.	25¢ & 10¢
Douglas	25¢ & 10¢
Bonney's Adjustable, 1/2 doz 48	40¢ & 10¢
Stearns	20¢ & 10¢
Ives' Expansive, each \$4.50	50¢ & 50¢
Universal Expansive, each \$4.50	20¢
Wood's	25¢ & 25¢ & 10¢

Expansive Bits—

Clarke's small, 18; large, 28	35¢ & 35¢ & 5¢
Ives' No. 4, 1/2 doz 80	40¢
Swan's	40¢
Stearns, No. 1, 22; No. 2, 22	35¢
Stearns' No. 2, 48	20¢

Gimlet Bits—

Common	1/2 gross \$2.75 @ \$3.25
Diamond	1/2 doz \$1.10, 25¢ & 10¢
Bee	25¢ & 25¢ & 5¢
Double Cut, Sheppardson's	45¢ & 45¢ & 5¢
Double Cut, Ct. Valley Mfg. Co.	30¢ & 10¢
Double Cut, Hartwell's, 1/2 gross	85¢
Double Cut, Douglas	40¢ & 10¢
Double Cut, Ives	60¢ & 60¢ & 5¢

Bit Stock Drills—

Morse Twist Drills	50¢ & 10¢ & 5¢
Standard	50¢ & 10¢ & 5¢
Cleveland	50¢ & 10¢ & 5¢
Syracuse, for metal	50¢ & 10¢ & 5¢
Syracuse, for wood (wood list)	30¢ & 30¢ & 5¢
Williams' or Holt's, for metal	50¢ & 10¢ & 5¢
Williams' or Holt's, for wood	40¢ & 10¢

Ship Augers and Bits—

L'Hommedieu's	15¢ & 10¢ @ 15¢ & 10¢ & 5¢
Watrous	15¢ & 10¢ @ 15¢ & 10¢ & 5¢
Snell's	15¢ & 10¢ @ 15¢ & 10¢ & 5¢
Snell's Ship Auger Patt'n Car Bits	15¢ & 10¢ @ 15¢ & 10¢ & 5¢

Awl Hafts—	
Sewing, Brass Per. 1/2 gr, 3.50	45¢ & 10¢
Pat. Sewing, Short, 1.00 1/2 doz	40¢ & 10¢
Pat. Sewing, Long	1/2 doz \$1.20
Pat. Peg, Plain Top, 1/2 gr \$10.00	45¢ & 10¢
Pat. Peg, Leather Top, 1/2 gr \$12.00	45¢ & 10¢

Awls, Brad Sets, &c—

Awls, Sewing, Common, 1/2 gr \$1.70	35¢
Awls, Should. Peg, 1/2 gr \$2.45	40¢ & 40¢ & 10¢
Awls, Pat. Peg, 1/2 gr 65¢	40¢ & 40¢ & 10¢
Awls, Shouldered Brad, 2.70 1/2 gr	35¢
Awls, Handled Brad, 3.75 1/2 gr	45¢
Awls, Handled Scratch 1/2 gr, 7.50	35¢ & 10¢
Awls, Socket Scratch, 1/2 doz, 1.50	25¢ & 30¢

Awl and Tool Sets—

Alken's Sets, Awls and Tools	
No. 20, 1/2 doz \$10.00	55¢ & 10¢
Fray's Adj. Tool Hds., Nos. 1, 2; 2, 18; 3, 12; 4, 8	25¢ & 25¢ & 10¢
Miller's Falls Adj. Tool Hds.	25¢
No. 1, 12; 2, 18	25¢
Henry's Combination Haft, 1/2 doz \$6.50	
Brad Sets	
No. 42, 10.50; No. 43, 12.50	70¢ & 10¢ & 5¢
Stanley's Excelsior	
No. 1, 8.50; No. 2, 9.00; No. 3, 9.50	30¢ & 10¢

Axes—

Makers' and Special Brands—	
First quality	1/2 doz \$6.00 @ \$6.50
Others	1/2 doz \$5.50 @ \$5.75

Axle Grease—

Fraser's	Keg 1/2 4¢, Pail 1/2 5¢
Fraser's, in boxes	1/2 gr \$0.50
Dixon's Everlasting, in bxs.	1/2 doz 1.10; 2 2.00
Dixon's Everlasting, 10-m pails, ea. 5¢	
Lower grades, special brands	1/2 gr \$5.50 @ \$7.00

Axles—

No. 1	4¢ @ 4¢, No. 2 5¢ @ 5¢
Nos. 7 to 14	55¢ & 55¢
Nos. 15 to 18	47¢ & 47¢
Nos. 19 to 22	70¢
National Tubular Self-Oiling Standard	
Farm (1 to 5) and Special Farm (A1 to A5)	
Less than 10 sets	33¢ & 45¢
Over 10 sets	33¢ & 45¢

Bag Holders—

Sprengle's Pat.	1/2 doz \$18.00
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Balances—

Spring Balances	50¢
Common 24-lb	1/2 doz \$1.50
Chatillon's Spring Balances	50¢
Chatillon's Circular Spring Balances	60¢

Bells—

Hand—	
Light Brass	70¢ & 10¢
Extra Heavy	60¢ & 10¢
White Metal	60¢ & 10¢
Silver Chime	35¢ & 10¢
Globe (Cone's Patent)	25¢ & 10¢ & 35¢

Door—

Gong, Abbe's	33¢ & 10¢
Gong, Yankee	45¢ & 10¢
Gong, Barton's	40¢ & 10¢ & 50¢
Crank, Taylor's	25¢ & 10¢
Crank, Brooks'	50¢ & 10¢ & 25¢
Crank, Cone's	10¢

Crank, Connel's	20¢ & 10¢
Lever, Sargent's	60¢ & 10¢
Lever, Taylor's Bronzed or Plated	net
Lever, Taylor's Japanned	25¢ & 10¢
Lever, R. E. M. Co.'s	50¢ & 10¢ & 25¢
Pull, Brook's	50¢ & 10¢ & 25¢
Pull, Western	25¢ & 10¢

Cow—

Common Wrought	60¢ & 10¢
Western	20¢ & 10¢
Western, Sargent's list	70¢ & 10¢
Kentucky, "Star"	20¢ & 10¢
Kentucky, Sargent's list	70¢ & 10¢
Dodge, Genuine Kentucky	70¢ & 70¢ & 10¢
Texas Star	50¢ & 10¢ & 50¢ & 10¢ & 50¢
Call	40¢ & 40¢ & 5¢
Farm Bells	1/2 doz 3¢ @ 3¢
Steel Alloy Church and School Bells	40¢

Bellows—

Blacksmiths'	50¢ & 10¢ & 50¢
Molders'	40¢ & 40¢ & 10¢
Hand Bellows	40¢ & 10¢ & 50¢

Belling, Rubber—

Common Standard	70¢ & 10¢
Standard	70¢ & 70¢ & 5¢
Extra	60¢ & 50¢ & 60¢ & 10¢
N. Y. B. & P. Co., Carbon	60¢ & 10¢ & 50¢
N. Y. B. & P. Co., Diamond	50¢ & 10¢

Bench Stops—

Morrill's	1/2 doz \$9.00
Hotchkiss's	1/2 doz \$5.00, dis 10¢ & 10¢
Weston's, No. 1, 10; No. 2, 9.25	10¢ & 50¢
McGill's	1/2 doz \$3.00

Bits—

Auger, Gimlet, Bit Stock, Drills, &c., see Augers and Bits.	
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Bit Holders—

Extension	
Barber's, 1/2 doz \$15.00	40¢ & 40¢ & 10¢
Ives, 1/2 doz \$20.00	60¢ & 50¢ & 60¢ & 10¢
Diagonal	1/2 doz \$24.00
Angular	1/2 doz \$24.00

Blind Adjusters—

Domestic	1/2 doz \$3.00, dis 33¢ & 5¢
Excelsior	1/2 doz \$10.00
Washburn's Self-Locking	20¢ & 30¢ & 10¢

Blind Fasteners—

Mackrell's, 1/2 doz, 1.00	20¢ & 20¢ & 10¢
Van Sand's Screw Pat., 1/2 gr	60¢ & 10¢
Van Sand's Old Pat., 1/2 gr	65¢ & 10¢
Washburn's Old Pattern	80¢ & 10¢
Merriman's, new list, net	
Austin & Eddy No. 2008	80¢ & 10¢
Security Gravity	1/2 doz \$10.00

Blind Staples—

Barbed, 1/2 in. and larger	1/2 doz 7¢ @ 8¢ net
Barbed, 3/4 in.	1/2 doz 8¢ @ 9¢ net

Blocks—

Cleveland Block Co., Mal. Iron	50¢
Moore's Novelty, Mal. Iron	50¢

Bolts—

Door and Shutter—	
Cast Iron Barrel, Square, &c.	70¢ & 70¢ & 10¢
Cast Iron Shutter Bolts	70¢ & 70¢ & 10¢
Cast Iron Chain (Sargent's list)	65¢ & 10¢
Ives' Patent Door Bolts	60¢
Wrought Barrel	70¢ & 70¢ & 10¢
Wrought Square	70¢ & 70¢ & 10¢
Wt's Shutter, all Iron, Stanley's	60¢ & 10¢
Wt's Shutter, Brass Knob	40¢ & 10¢
Wt's Shutter, Sargent's list	60¢ & 10¢
Wt's Sunk Flush, Sargent's list	55¢ & 10¢
Wt's Sunk Flush, Stanley's list	50¢ & 10¢
Wt's B.K. Flush, Com'n	55¢ & 10¢

Carriage, Machine, &c.—

Com. list June 10, '84	75¢ & 10¢ & 25¢
Genuine Eagle, list Oct. '84	75¢ & 10¢
Phila. pattern, list Oct. '84	75¢ & 10¢ @
R. B. & W., old list	75¢ & 10¢ & 5¢
Machine, according to size	75¢ & 10¢ & 80¢
Boit Ends, according to size	75¢ & 10¢ & 80¢

Tire—

Common, list Feb. 28, '83	70¢
Portchester Bolt and Nut Company	
Empire, list Feb. 28, '83	70¢
Phila., list Oct. '84	82¢ & 3¢
Keystone, Philadel., list Oct. '84	80¢
Norway, Phila., list Oct. '84	75¢ & 10¢
American Screw Company	
Norway, Phil., list Oct. '84	75¢ & 10¢
Eagle, Phil., list Oct. '84	80¢
Phila., list Oct. '84	82

Cards—

Horse & Curry	10&10&10&10&10
Cotton	New list, Aug., 1883, 10&10&10
Wool	New list, Aug., 1883, 10&10&10

Carpet Stretchers—

Cast Steel, Polished	per doz \$2.25
Cast Iron, Steel Points	per doz \$2.80
Socket	per doz \$1.75
Bullard's	25&25&10

Carpet Sweepers—

Bissell No. 5	per doz \$17.00
Bissell No. 7 New Drop Pan	per doz \$19.00
Bissell, Grand	per doz \$36.00
Grand Rapids	per doz \$24.00
Crown Jewel, No. 1	\$19.00; No. 3, \$20.00
Magie	per doz \$15.00
Jewel	per doz \$17.00
Improved Parlor Queen, Nickle	per doz \$27.00
Improved Parlor Queen, Japaned	per doz \$24.00
Excelstor	per doz \$22.00
Garland	per doz \$18.00
Parlor Queen	per doz \$24.00
Housewife's Delight	per doz \$15.00
Queen	per doz \$18.00
Queen, with band	per doz \$18.00
King	per doz \$30.00
Weed, Improved	per doz \$18.00
Hub	per doz \$16.00
Cog-Wheel	per doz \$16.00
Conqueror	per doz \$22.00
Easy	per doz \$22.00
Monarch	per doz \$22.00
Goshen	per doz \$21.00
Advance	per doz \$18.00
Ladies' Friend, No. 1	per doz \$15.00
No. 2	per doz \$16.00
American	per doz \$15.00
Grand Republic	per doz \$36.00

Cartridges—

See Ammunition.

Casters—

Bed	New list:
Plate	Brass, 55&55&5
Shallow Socket	Others, 60&60&5
Deep Socket	40&10
Yale Casters, list May, 1884	30&10&40
Yale, Gem	60&60&5
Martin's Patent (Phoenix)	45&10&50
Payson's Anti-Friction	60&60&10
Giant Truck Casters	30
Stationary Truck Casters	50&10
Socket Truck Casters	60

Cattle Leaders—

Humason, Beckley & Co.'s	70
Sargent's	60&10
Hotchkiss	30
Peck, Stow & W. Co.	50&10

Chain—

Trace, 9/16-10-2, exact	per pair \$1.03
Trace, 9/16-10-3, exact	per pair \$1.03
Trace, 7-10-2, exact	per pair \$1.11
NOTE.—Traces, "Regular" sizes, 3/4 net	per pair less than exact
Log, Fifth, Stretcher, and other fancy	Chains, list Nov. 1, 1884
American Coil, in cask lots,	3-16 1/4 6-16 3/4 7-16 1/2 8-16 3/4 9-16 1/2 10-16 3/4 11-16 1/2 12-16 3/4 13-16 1/2 14-16 3/4 15-16 1/2 16-16 3/4 17-16 1/2 18-16 3/4 19-16 1/2 20-16 3/4 21-16 1/2 22-16 3/4 23-16 1/2 24-16 3/4 25-16 1/2 26-16 3/4 27-16 1/2 28-16 3/4 29-16 1/2 30-16 3/4 31-16 1/2 32-16 3/4 33-16 1/2 34-16 3/4 35-16 1/2 36-16 3/4 37-16 1/2 38-16 3/4 39-16 1/2 40-16 3/4 41-16 1/2 42-16 3/4 43-16 1/2 44-16 3/4 45-16 1/2 46-16 3/4 47-16 1/2 48-16 3/4 49-16 1/2 50-16 3/4 51-16 1/2 52-16 3/4 53-16 1/2 54-16 3/4 55-16 1/2 56-16 3/4 57-16 1/2 58-16 3/4 59-16 1/2 60-16 3/4 61-16 1/2 62-16 3/4 63-16 1/2 64-16 3/4 65-16 1/2 66-16 3/4 67-16 1/2 68-16 3/4 69-16 1/2 70-16 3/4 71-16 1/2 72-16 3/4 73-16 1/2 74-16 3/4 75-16 1/2 76-16 3/4 77-16 1/2 78-16 3/4 79-16 1/2 80-16 3/4 81-16 1/2 82-16 3/4 83-16 1/2 84-16 3/4 85-16 1/2 86-16 3/4 87-16 1/2 88-16 3/4 89-16 1/2 90-16 3/4 91-16 1/2 92-16 3/4 93-16 1/2 94-16 3/4 95-16 1/2 96-16 3/4 97-16 1/2 98-16 3/4 99-16 1/2 100-16 3/4 101-16 1/2 102-16 3/4 103-16 1/2 104-16 3/4 105-16 1/2 106-16 3/4 107-16 1/2 108-16 3/4 109-16 1/2 110-16 3/4 111-16 1/2 112-16 3/4 113-16 1/2 114-16 3/4 115-16 1/2 116-16 3/4 117-16 1/2 118-16 3/4 119-16 1/2 120-16 3/4 121-16 1/2 122-16 3/4 123-16 1/2 124-16 3/4 125-16 1/2 126-16 3/4 127-16 1/2 128-16 3/4 129-16 1/2 130-16 3/4 131-16 1/2 132-16 3/4 133-16 1/2 134-16 3/4 135-16 1/2 136-16 3/4 137-16 1/2 138-16 3/4 139-16 1/2 140-16 3/4 141-16 1/2 142-16 3/4 143-16 1/2 144-16 3/4 145-16 1/2 146-16 3/4 147-16 1/2 148-16 3/4 149-16 1/2 150-16 3/4 151-16 1/2 152-16 3/4 153-16 1/2 154-16 3/4 155-16 1/2 156-16 3/4 157-16 1/2 158-16 3/4 159-16 1/2 160-16 3/4 161-16 1/2 162-16 3/4 163-16 1/2 164-16 3/4 165-16 1/2 166-16 3/4 167-16 1/2 168-16 3/4 169-16 1/2 170-16 3/4 171-16 1/2 172-16 3/4 173-16 1/2 174-16 3/4 175-16 1/2 176-16 3/4 177-16 1/2 178-16 3/4 179-16 1/2 180-16 3/4 181-16 1/2 182-16 3/4 183-16 1/2 184-16 3/4 185-16 1/2 186-16 3/4 187-16 1/2 188-16 3/4 189-16 1/2 190-16 3/4 191-16 1/2 192-16 3/4 193-16 1/2 194-16 3/4 195-16 1/2 196-16 3/4 197-16 1/2 198-16 3/4 199-16 1/2 200-16 3/4 201-16 1/2 202-16 3/4 203-16 1/2 204-16 3/4 205-16 1/2 206-16 3/4 207-16 1/2 208-16 3/4 209-16 1/2 210-16 3/4 211-16 1/2 212-16 3/4 213-16 1/2 214-16 3/4 215-16 1/2 216-16 3/4 217-16 1/2 218-16 3/4 219-16 1/2 220-16 3/4 221-16 1/2 222-16 3/4 223-16 1/2 224-16 3/4 225-16 1/2 226-16 3/4 227-16 1/2 228-16 3/4 229-16 1/2 230-16 3/4 231-16 1/2 232-16 3/4 233-16 1/2 234-16 3/4 235-16 1/2 236-16 3/4 237-16 1/2 238-16 3/4 239-16 1/2 240-16 3/4 241-16 1/2 242-16 3/4 243-16 1/2 244-16 3/4 245-16 1/2 246-16 3/4 247-16 1/2 248-16 3/4 249-16 1/2 250-16 3/4 251-16 1/2 252-16 3/4 253-16 1/2 254-16 3/4 255-16 1/2 256-16 3/4 257-16 1/2 258-16 3/4 259-16 1/2 260-16 3/4 261-16 1/2 262-16 3/4 263-16 1/2 264-16 3/4 265-16 1/2 266-16 3/4 267-16 1/2 268-16 3/4 269-16 1/2 270-16 3/4 271-16 1/2 272-16 3/4 273-16 1/2 274-16 3/4 275-16 1/2 276-16 3/4 277-16 1/2 278-16 3/4 279-16 1/2 280-16 3/4 281-16 1/2 282-16 3/4 283-16 1/2 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375-16 1/2 376-16 3/4 377-16 1/2 378-16 3/4 379-16 1/2 380-16 3/4 381-16 1/2 382-16 3/4 383-16 1/2 384-16 3/4 385-16 1/2 386-16 3/4 387-16 1/2 388-16 3/4 389-16 1/2 390-16 3/4 391-16 1/2 392-16 3/4 393-16 1/2 394-16 3/4 395-16 1/2 396-16 3/4 397-16 1/2 398-16 3/4 399-16 1/2 400-16 3/4 401-16 1/2 402-16 3/4 403-16 1/2 404-16 3/4 405-16 1/2 406-16 3/4 407-16 1/2 408-16 3/4 409-16 1/2 410-16 3/4 411-16 1/2 412-16 3/4 413-16 1/2 414-16 3/4 415-16 1/2 416-16 3/4 417-16 1/2 418-16 3/4 419-16 1/2 420-16 3/4 421-16 1/2 422-16 3/4 423-16 1/2 424-16 3/4 425-16 1/2 426-16 3/4 427-16 1/2 428-16 3/4 429-16 1/2 430-16 3/4 431-16 1/2 432-16 3/4 433-16 1/2 434-16 3/4 435-16 1/2 436-16 3/4 437-16 1/2 438-16 3/4 439-16 1/2 440-16 3/4 441-16 1/2 442-16 3/4 443-16 1/2 444-16 3/4 445-16 1/2 446-16 3/4 447-16 1/2 448-16 3/4 449-16 1/2 450-16 3/4 451-16 1/2 452-16 3/4 453-16 1/2 454-16 3/4 455-16 1/2 456-16 3/4 457-16 1/2 458-16 3/4 459-16 1/2 460-16 3/4 461-16 1/2 462-16 3/4 463-16 1/2 464-16 3/4 465-16 1/2 466-16 3/4 467-16 1/2 468-16 3/4 469-16 1/2 470-16 3/4 471-16 1/2 472-16 3/4 473-16 1/2 474-16 3/4 475-16 1/2 476-16 3/4 477-16 1/2 478-16 3/4 479-16 1/2 480-16 3/4 481-16 1/2 482-16 3/4 483-16 1/2 484-16 3/4 485-16 1/2 486-16 3/4 487-16 1/2 488-16 3/4 489-16 1/2 490-16 3/4 491-16 1/2 492-16 3/4 493-16 1/2 494-16 3/4 495-16 1/2 496-16 3/4 497-16 1/2 498-16 3/4 499-16 1/2 500-16 3/4 501-16 1/2 502-16 3/4 503-16 1/2 504-16 3/4 505-16 1/2 506-16 3/4 507-16 1/2 508-16 3/4 509-16 1/2 510-16 3/4 511-16 1/2 512-16 3/4 513-16 1/2 514-16 3/4 515-16 1/2 516-16 3/4 517-16 1/2 518-16 3/4 519-16 1/2 520-16 3/4 521-16 1/2 522-16 3/4 523-16 1/2 524-16 3/4 525-16 1/2 526-16 3/4 527-16 1/2 528-16 3/4 529-16 1/2 530-16 3/4 531-16 1/2 532-16 3/4 533-16 1/2 534-16 3/4 535-16 1/2 536-16 3/4 537-16 1/2 538-16 3/4 539-16 1/2 540-16 3/4 541-16 1/2 542-16 3/4 543-16 1/2 544-16 3/4 545-16 1/2 546-16 3/4 547-16 1/2 548-16 3/4 549-16 1/2 550-16 3/4 551-16 1/2 552-16 3/4 553-16 1/2 554-16 3/4 555-16 1/2 556-16 3/4 557-16 1/2 558-16 3/4 559-16 1/2 560-16 3/4 561-16 1/2 562-16 3/4 563-16 1/2 564-16 3/4 565-16 1/2 566-16 3/4 567-16 1/2 568-16 3/4 569-16 1/2 570-16 3/4 571-16 1/2 572-16 3/4 573-16 1/2 574-16 3/4 575-16 1/2 576-16 3/4 577-16 1/2 578-16 3/4 579-16 1/2 580-16 3/4 581-16 1/2 582-16 3/4 583-16 1/2 584-16 3/4 585-16 1/2 586-16 3/4 587-16 1/2 588-16 3/4 589-16 1/2 590-16 3/4 591-16 1/2 592-16 3/4 593-16 1/2 594-16 3/4 595-16 1/2 596-16 3/4 597-16 1/2 598-16 3/4 599-16 1/2 600-16 3/4 601-16 1/2 602-16 3/4 603-16 1/2 604-16 3/4 605-16 1/2 606-16 3/4 607-16 1/2 608-16 3/4 609-16 1/2 610-16 3/4 611-16 1/2 612-16 3/4 613-16 1/2 614-16 3/4 615-16 1/2 616-16 3/4 617-16 1/2 618-16 3/4 619-16 1/2 620-16 3/4 621-16 1/2 622-16 3/4 623-16 1/2 624-16 3/4 625-16 1/2 626-16 3/4 627-16 1/2 628-16 3/4 629-16 1/2 630-16 3/4 631-16 1/2 632-16 3/4 633-16 1/2 634-16 3/4 635-16 1/2 636-16 3/4 637-16 1/2 638-16 3/4 639-16 1/2 640-16 3/4 641-16 1/2 642-16 3/4 643-16 1/2 644-16 3/4 645-16 1/2 646-16 3/4 647-16 1/2 648-16 3/4 649-16 1/2 650-16 3/4 651-16 1/2 652-16 3/4 653-16 1/2 654-16 3/4 655-16 1/2 656-16 3/4 657-16 1/2 658-16 3/4 659-16 1/2 660-16 3/4 661-16 1/2 662-16 3/4 663-16 1/2 664-16 3/4 665-16 1/2 666-16 3/4 667-16 1/2 668-16 3/4 669-16 1/2 670-16 3/4 671-16 1/2 672-16 3/4 673-16 1/2 674-16 3/4 675-16 1/2 676-16 3/4 677-16 1/2 678-16 3/4 679-16 1/2 680-16 3/4 681-16 1/2 682-16 3/4 683-16 1/2 684-16 3/4 685-16 1/2 686-16 3/4 687-16 1/2 688-16 3/4 689-16 1/2 690-16 3/4 691-16 1/2 692-16 3/4 693-16 1/2 694-16 3/4 695-16 1/2 696-16 3/4 697-16 1/2 698-16 3/4 699-16 1/2 700-16 3/4 701-16 1/2 702-16 3/4 703-16 1/2 704-16 3/4 705-16 1/2 706-16 3/4 707-16 1/2 708-16 3/4 709-16 1/2 710-16 3/4 711-16 1/2 712-16 3/4 713-16 1/2 714-16 3/4 715-16 1/2 716-16 3/4 717-16 1/2 718-16 3/4 719-16 1/2 720-16 3/4 721-16 1/2 722-16 3/4 723-16 1/2 724-16 3/4 725-16 1/2 726-16 3/4 727-16 1/2 728-16 3/4 729-16 1/2 730-16 3/4 731-16 1/2 732-16 3/4 733-16 1/2 734-16 3/4 735-16 1/2 736-16 3/4 737-16 1/2 738-16 3/4 739-16 1/2 740-16 3/4 741-16 1/2 742-16 3/4 743-16 1/2 744-16 3/4 745-16 1/2 746-16 3/4 747-16 1/2 748-16 3/4 749-16 1/2 750-16 3/4 751-16 1/2 752-16 3/4 753-16 1/2 754-16 3/4 755-16 1/2 756-16 3/4 757-16 1/2 758-16 3/4 759-16 1/2 760-16 3/4 761-16 1/2 762-16 3/4 763-16 1/2 764-16 3/4 765-16 1/2 766-16 3/4 767-16 1/2 768-16 3/4 769-16 1/2 770-16 3/4 771-16 1/2 772-16 3/4 773-16 1/2 774-16 3/4 775-16 1/2 776-16 3/4 777-16 1/2 778-16 3/4 779-16 1/2 780-16 3/4 781-16 1/2 782-16 3/4 783-16 1/2 784-16 3/4 785-16 1/2 786-16 3/4 787-16 1/2 788-16 3/4 789-16 1/2 790-16 3/4 791-16 1/2 792-16 3/4 793-16 1/2 794-16 3/4 795-16 1/2 796-16 3/4 797-16 1/2 798-16 3/4 799-16 1/2 800-16 3/4 801-16 1/2 802-16 3/4 803-16 1/2 804-16 3/4 805-16 1/2 806-16 3/4 807-16 1/2 808-16 3/4 809-16 1/2 810-16 3/4 811-16 1/2 812-16 3/4 813-16 1/2 814-16 3/4 815-16 1/2 816-16 3/4 817-16 1/2 818-16 3/4 819-16 1/2 820-16 3/4 821-16 1/2 822-16 3/4 823-16 1/2 824-16 3/4 825-16 1/2 826-16 3/4 827-16 1/2 828-16 3/4 829-16 1/2 830-16 3/4 831-16 1/2 832-16 3/4 833-16 1/2 834-16 3/4 835-16 1/2 836-16 3/4 837-16 1/2 838-16 3/4 839-16 1/2 840-16 3/4 841-16 1/2 842-16 3/4 843-16 1/2 844-16 3/4 845-16 1/2 846-16 3/4 847-16 1/2 848-16 3/4 849-16 1/2 850-16 3/4 851-16 1/2 852-16 3/4 853-16 1/2 854-16 3/4 855-16 1/2 856-16 3/4 857-16 1/2 858-16 3/4 859-16 1/2 860-16 3/4 861-16 1/2 862-16 3/4 863-16 1/2 864-16 3/4 865-16 1/2 866-16 3/4 867-16 1/2 868-16 3/4 869-16 1/2 870-16 3/4 871-16 1/2 872-16 3/4 873-16 1/2 874-16 3/4 875-16 1/2 876-16 3/4 877-16 1/2 878-16 3/4 879-16 1/2 880-16 3/4 881-16 1/2 882-16 3/4 883-16 1/2 884-16 3/4 885-16 1/2 886-16 3/4 887-16 1/2 888-16 3/4 889-16 1/2 890-16 3/4 891-16 1/2 892-16 3/4 893-16 1/2 894-16 3/4 895-16 1/2 896-16 3/4 897-16 1/2 898-16 3/4 899-16 1/2 900-16 3/4 901-16 1/2 902-16 3/4 903-16 1/2 904-16 3/4 905-16 1/2 906-16 3/4 907-16 1/2 908-16 3/4 909-16 1/2 910-16 3/4 911-16 1/2 912-16 3/4 913-16 1/2 914-16 3/4 915-16 1/2 916-16 3/4 917-16 1/2 918-16 3/4 919-16 1/2 920-16 3/4 921-16 1/2 922-16 3/4 923-16 1/2 924-16 3/4 925-16 1/2 926-16 3/4 927-16 1/2 928-16 3/4 929-16 1/2 930-16 3/4 931-16 1/2 932-16 3/4 933-16 1/2 934-16 3/4 935-16 1/2

Lothrop's.....	20&10%
Smith's, ♀ doz, Single, \$2.00; Double, \$3	40&45%
Knapp & Cowles.....	50&10&60%
Buffalo Adjustable.....	♀ doz, \$3.00, 25%

Atkins' Silver Steel Diamond X Cuts

Atkins' Special Steel Dexter X Cuts # foot 70¢
Atkins' Special Steel Diamond X Cuts # foot 50¢
Atkins' Champion and Electric Tooth
X Cuts..... # foot 30¢
Atkins' Hollow Back X Cuts. # foot 18¢
Atkins' Muly, Mill and Drag..... 40¢
W. M. & C., Hand..... 30¢ & 50¢ to 10¢
W. M. & C., Champion X Cuts. Recu.

W. M. & C. X Cuts, Thin Back.....
 ♀ foot 27 1/2 @ 29 1/2
 Peace Circular and Mill..... 46 & 10
 Peace Hand Panel and Rls.

Peace Cross Cuts, Standard... $\frac{1}{2}$ foot 25¢
Peace Cross Cuts, Thin Back $\frac{1}{2}$ foot 27¢@28¢
Richardson's Circular and Mill 45¢@46¢@10¢

Richardson's X Cuts,
No. 1, 39¢; No. 2, 27¢; No. 3, 24¢
Hack Saws—
Griffin's, complete.40¢10@50¢
Griffin's Hack Saw, Blades....40¢10@50¢
Star Hack Saws and Blades.....25¢

Diamond Hack Saws and Blades.....	25%
Eureka and Crescent.....	25%
Saw Frames—	

White Vermont..... $\text{\$}$ gro $\text{\$}9.00 @ \text{\$}10.00$
Red, Polished and Varnished.... $\text{\$}$ doz
 $\text{\$}1.50, 25\%$

Saw Sets—

Stillman's Genuine... $\text{\$}$ doz $\text{\$}5.00 @ \text{\$}7.75,$

Stillman's Imita..... 40&51
 Common Lever..... 40&50@40&10
 Morrill's No. 1, \$15.00; Nos. 3&4, \$24.00.
 Leach's No. 0 \$8.00; No. 1 \$15.15@20

Nash's.....30&10@20&10&10
Hammer, Hotchkiss.....\$5.50, dis 10%
Hammer, Bernis & Call Co.'s new Pat. 30&5%
Bernis & Call Co.'s Lower and Street

Hammer.....	30¢5¢
Bemis & Call Co.'s Plate.....	10¢
Bemis & Call Co.'s Cross Cut.....	12¢5¢
Aiken's Genuine.....	\$13.00, 56¢10¢
Aiken's Imitation.....	\$7.00, 55¢5¢
Hart's Pat. Lever.....	20¢

Dinston's Star, #9, No. 15, \$5.50; dia 20&
 10@20&10@10&
 Atkin's Lever, # doz No. 1, \$6.00; No. 2,
 \$9.60
 Atkin's Criterion, # doz \$7.50
 Croissant (Keller), No. 1, \$15.00; No. 2,
 \$24.00 40&10&

Saw Tools—

Atkin's Perfection, \$15.00; Excelsior,
Scales— \$6.00 $\frac{1}{2}$ doz
Hatch, Counter, No. 171, good quality,
\$2.00 $\frac{1}{2}$ doz

Hatch, Tea, No. 161....	7 doz	\$6.75	\$7.00
Union Platform, Plain.....		\$2.10	\$2.20
Union Platform, Striped.....		\$2.20	\$2.30
Chatillon's Grocers' Trip Scales.....			.50%
Chatillon's Eureka.....			.25%
Chatillon's Favorite.....			.40%

Family, Harbours.....	500@500=10%
Riehle Bros.' Platform.....	5%

Scale Beams—

Scale Beans, List Jan. 12, '82...50¢&10¢
Chatillon's No. 1.....40¢
Chatillon's No. 2.....50¢

Scrapers—

Adjustable Box Scraper (S. R. & L. Co.)		
\$6.50		30&10%
Box, 1 Handle.....	per doz	\$4.00, 10%
Box, 2 Handle.....	per doz	\$6.00, 10%
Defiance Box and Ship.....		20&10%
Foot.....		50&10&00%
Shin. Common	per doz	\$3.50 per doz

Screen Window and Door Frames—

Porter's Pat. Window and Door Frame. 331-210
Warner's Screen Corner Irons... 331-210
Stearns' Frames and Corners. 25-26-10

Screw Drivers—

Douglas Mfg. Co.....	20¢10¢10¢
Disston's.....	45¢10¢

Diston's Pat. Excelsior.....	45¢ 10¢
Buck Bros.....	30¢
Stanley R. & L. Co.'s	
Varnished Handles.....	65¢ 10¢
Black Handles.....	60¢ 10¢
Sargent & Co.'s	
No. 1 Forged Blade.....	60¢ 10¢ 10¢

Nos. 20, 30 and 60.....	66¢ 1/2 @ 10¢ 10¢
Knapp & Cowles' No. 1.....	60¢ 20¢ 70¢
No. 1 Extra.....	80¢ 40¢ 10¢
Nos. 00 & 4.....	50¢ 5¢ 10¢ 5¢
Stearns'.....	25¢ 10¢ 5¢
Gay & Parsons.....	35¢
Champion.....	95¢ 10¢

Clark's Pat.....	30@33 1/2
Crawford's Adjustable.....	30
Ellrich's Socket and Ratchet..	25@25 1/2 10
Allard's Spiral, new list.....	25
Kolb's Common Sense..	7 doz \$6.00, dis 25@10

Syracuse Screw-Driver Bits..... 30¢ 30¢ 15¢
Screw Driver Bits..... 7¢ doz 50¢ 75¢
Screw-Driver Bits, Parr's..... 7¢ gro \$6.25
Fray's Hol. Hdle. Sets. No. 3, \$12.00, dis
25¢ 25¢ 10¢
P. D. & Co.'s all Steel..... 50¢

Screws--
Wood Screws--List March 1, 1889:
Flat Head Iron.....50%
Round Head Iron....40%
Flat Head Brass.....45%
Best A.B. Screws.....35% Extras
often given

Round Head Brass...	80%	Given away by jobbers
Flat Head Bronze...	45%	
Round Head Bronze...	35%	

Machine—	
Flat Head, Iron.....	55¢
Round Head, Iron.....	50¢
Bench and Hand—	
Bench, Iron.....	55¢10¢55¢10¢10¢
Bench, Wood, Beech.....	20¢
Bench, Wood, Hickory.....	20¢10¢
Hand, Wood.....	25¢10¢25¢10¢5¢
Lag, Blunt Point.....	75¢75¢
Coach and Lag, Gimlet Point.....	75¢
Bed.....	25¢5¢
Hand Rail, Sargent's.....	60¢10¢
Hand Rail, H. & B. Mfg. Co.....	70¢10¢
Hand Rail, Am. Screw Co.....	75¢
Jack Screws, Millers Falls list.....	50¢50¢5¢
Jack Screws, P. S. & W.....	35¢
Jack Screws, Sargent.....	60¢10¢10¢10¢5¢
Jack Screws, Stearns.....	40¢40¢10¢

Scroll Saws—	
Lester, complete, \$10.00.....	25¢
Rogers, complete, \$4.00.....	25¢
Barnes' Builders' and Cabinet Makers.....	15¢
Barnes' Scroll Saw Blades.....	35¢

Seythe Snaths.....	50¢2¢
Shears—	
American (Cast) Iron.....	75¢10¢75¢10¢5¢
Pruning.....	See Pruning Hooks and Shears.
Barnard's Lamp Trimmers.....	20¢2¢
Tinners'.....	20¢2¢
Seymour's, List, Dec. 1881.....	60¢10¢10¢60¢10¢10¢5¢

Heinrich's, List, Dec. 1881.....	60¢10¢10¢60¢10¢10¢5¢
Heinrich's Tailor's Shears.....	35¢
First quality C. S. Trimmers.....	80¢80¢10¢
Second quality C. S. Trimmers.....	80¢10¢80¢10¢10¢
Acme Cast Shears.....	10¢10¢
Diamond Cast Shears.....	10¢
Clippers.....	75¢10¢75¢10¢5¢
Victor Cast Shears.....	10¢
Howe Bros. & Hulbert, Solid Forged Steel.....	40¢
Chicago Drop Forge & F. Co., Solid Steel Forged.....	70¢
Clausen Shear Co., Japanned.....	70¢
Clausen Shear Co., Nickeled, same list.....	90¢

Sheaves—	
Sliding Door—	
M. W. Co., list July, 1888.....	50¢10¢60¢10¢
R. & E. list Dec. 18, 1885.....	55¢20¢
Corbin's list.....	60¢10¢2¢
Patent Roller.....	60¢10¢2¢
Patent Roller, Hatfield's.....	75¢
Russell's Anti-Friction, list Dec. 18, 1885.....	60¢2¢
Moore's Anti-Friction.....	50¢

Sliding Shutter—	
R. & E. list Dec. 18, 1885.....	60¢10¢2¢
Sargent's list.....	60¢10¢
Reading list.....	60¢10¢10¢

Ship Tools—	
L. & J. White.....	20¢5¢
Albion Mfg. Co.....	25¢

Shoes, Horse, Mule, &c.—	
Horse—	
Burden's, Perkins', Phoenix, at factory.....	\$4.00

Mule—	
Add \$1 per keg to above prices.	
Oz. Wrought—	
Ton lots.....	10¢ 2¢
1000 lb lots.....	10¢ 9¢
500 lb lots.....	10¢ 8¢

Shot—	
(Eastern prices 2¢ off, cash, 5 days.)	
Drop, 25 bag, 25 lb.....	\$1.20
Drop, 5 bag, 5 lb.....	.29
Buck and Chilled, 25 lb bag.....	1.45
Buck and Chilled, 5 lb bag.....	.34

Shovels and Spades—	
Ames' Shovels, Spades, &c., list Nov. 1, 1885.....	20¢
Notes—Jobbers frequently give 5¢ to 7½¢ extra on above.	
Grimth's Black Iron.....	50¢10¢
Grimth's C. S.....	60¢60¢10¢
Grimth's Solid C. S. R. R. Goods.....	20¢
Old Colony (Sanford Fork & Tool Co.).....	20¢
St. Louis Shovel Co.....	30¢20¢7½¢
Hussey, Binns & Co.....	15¢25¢
Hussey & Co.....	20¢20¢7½¢
Lehigh Mfg. Co.....	50¢10¢
Payne Pettibone & Son, list January, 1886.....	30¢
Remington's (Lowman's) Patent.....	30¢10¢40¢
Rowland's, Black Iron.....	50¢10¢
Rowland's Steel.....	60¢5¢60¢10¢

Shovels and Tongs—	
Iron Head.....	60¢10¢60¢10¢5¢
Brass Head.....	60¢10¢10¢

Skins, Thimble—	
Western list.....	75¢5¢75¢10¢
Columbus Wrt. Steel, list Nov. 1, 1887.....	20¢
Coldbrookdale Iron Co.....	50¢10¢
Utica P. S. T. Skins.....	60¢
Utica Turned and Fitted.....	35¢

Sieves—	
Buffalo Metallic, S. S. & Co.....	50¢25¢10¢
Barier Flour Sifters.....	20¢ \$2.00
Smith's Adjustable Sifters.....	20¢ \$2.00
Smith's Adjustable Milk Strainer.....	20¢
Smith's Adjustable T. & C. Strainer.....	20¢ \$1.25

Sieves, Wooden Rim—	
Mesh 18, Nested, 70¢.....	90¢
Mesh 20, Nested, 85¢.....	\$1.00
Mesh 24, Nested, 100¢.....	1.10

Slates—	
School, by case.....	50¢10¢

Snaps, Harness, &c.—	
Anchor (T. & S. Mfg. Co.).....	65¢
Fitch's (Bristol).....	50¢
Hotchkiss.....	10¢
Andrews.....	50¢
Sargent's Patent Guarded.....	70¢10¢10¢
German, new list.....	40¢10¢
Covered, New Patent.....	50¢2¢
Covered, New B. E.....	60¢2¢
Covered Spring.....	60¢10¢10¢

Soldering Irons—

Covert's Adjustable, list Jan. 1, 1886. 55¢2¢

Spoke Shaves—	
Iron.....	45¢
Wood.....	30¢
Barley's (Stanley R. & L. Co.).....	40¢10¢
Stearns.....	20¢10¢30¢

Spoke Trimmers—	
Bonney's.....	20¢ \$10.00, 50¢
Stearns.....	20¢10¢
Ives, No. 1, \$15.00; No. 2, \$12.00.....	55¢10¢
Douglas.....	20¢ \$0.00, 20¢

Spoons and Forks—

Tinned Iron—	
Basting, Cen. Stamp, Co's list.....	70¢10¢
Solid Table and Tea, Cen. Stamp, Co's.....	70¢10¢
Buffalo S. S. & Co.....	35¢2¢
Silver-Plated—(4 mos. or 5¢ cash 30 days.)	

Meriden Brit. Co., Rogers.....	50¢
C. Rogers & Bros.....	50¢
Rogers & Bro.....	50¢
Reed & Barton.....	50¢
Wm. Rogers Mfg. Co.....	50¢10¢60¢
Simpson, Hall, Miller & Co.....	50¢10¢
Holmes & Edwards Silver Co.....	50¢10¢
H. & E. Silver Co., Mexican Silver.....	50¢5¢
H. & E. Silver Co., Durham Silver.....	50¢5¢
German Silver.....	50¢50¢5¢
German Silver, Hall & Elton.....	50¢5¢ cash
Nickel Silver.....	60¢5¢50¢10¢5¢ cash
Britannia.....	60¢
Boardman's Nickel Ware.....	50¢10¢
Boardman's Britannia Spoons, case 100.....	50¢

Springs—	
Elliptic, Concord, Platform and Half.....	60¢60¢5¢
Coil.....	60¢60¢5¢
Cliff's Bolster Springs.....	25¢

Squares—	
Steel and Iron.....	75¢10¢80¢
Nickel-Plated.....	75¢10¢80¢
Try Square and T Bevels.....	60¢10¢10¢70¢
Diston's Try Square and T Bevels.....	40¢10¢
Winterbottom's Try and Miter.....	30¢10¢
Starrett's Micrometer Caliper Squares.....	30¢5¢
Avery's Flush Bevel Squares.....	30¢5¢

Staples—	
Fence Staples, Galvanized.....	Same price
Fence Staples, Plain.....	See P/B/Wire
See Trd. Rep.	

Steel Yards.....

40¢10¢50¢

Stocks and Dies—

Blacksmith's.....	30¢5¢30¢10¢
Waterford Goods.....	30¢5¢30¢10¢
Butterfield's Goods.....	25¢30¢
Lightning Screw Plate.....	35¢5¢40¢
Reece's New Screw Plates.....	35¢5¢40¢

Stone—

Hindustan No. 1, 3¢; Axe, 3½¢; Slips No. 1, 4½¢.....	20¢ 2½¢
Seneca Stone.....	19¢20¢
Washita Stone, Extra.....	14¢15¢
Washita Stone, No. 1.....	10¢11¢
Washita Stone, No. 2.....	30¢38¢
Washita Slips, No. 1, Extra.....	24¢25¢
Washita Slips, No. 1.....	24¢25¢
Arkansas Stone, No. 1, 4 to 6 in.....	\$1.50
Arkansas Stone, No. 1, 6 to 9 in.....	\$1.85
Turkey Oil Stone, 4 to 8 in.....	40¢
Turkey Slips.....	\$1.00 1.50
Lake Superior, Chase.....	1.50
Lake Superior Slips, Chase.....	31¢32¢
Seneca Stone, Red Paper Brand.....	20¢25¢
Seneca Stone, High Rounds.....	20¢25¢
Seneca Stone, Small Whets.....	20¢ \$24.00

Stove Polish—

Joseph Dixon's.....	20¢ \$0.00, dis 10¢
Gem.....	20¢ \$0.00, dis 10¢
Gold Medal.....	20¢ \$0.00, dis 10¢
Mirror.....	20¢ \$0.00, dis 10¢
Lustro.....	20¢ \$0.00, dis 10¢
Ruby.....	20¢ \$0.00, dis 10¢
Rising Sun, 5 gro lots.....	20¢ \$0.00, dis 10¢
Dixon's Plumbago.....	20¢ \$0.00, dis 10¢
Boynton's Noon Day.....	20¢ \$0.00, dis 10¢
Parlor Ride Stone Enamel.....	20¢ \$0.00, dis 10¢
Yates' Liquid.....	20¢ \$0.00, dis 10¢
Yates' Standard Paste Polish, 10 lb cans.....	20¢ \$0.00, dis 10¢

Jet Black.....	20¢ \$0.00, dis 10¢
Japanese.....	20¢ \$0.00, dis 10¢
Firestone.....	20¢ \$0.00, dis 10¢
Enamel.....	20¢ \$0.00, dis 10¢
Bonelli's Liquid Stove Polish.....	20¢ \$0.00, dis 10¢
Bonelli's Paste Stove Polish.....	20¢ \$0.00, dis 10¢
Black Eagle Benzine Paste, 5 and 10 lb cans.....	20¢ \$0.00, dis 10¢
Black Jack Water Paste, 5 and 10 lb cans.....	20¢ \$0.00, dis 10¢
Nickel Plate Paste.....	20¢ \$0.00, dis 10¢

Tacks, Brads, &c.—

List, Jan. 2, 1888.—(Note.—Some manufacturers are selling Tacks at slightly higher prices than those named.)	
American Iron Carpet.....	80¢80¢5¢
Steel Carpet.....	80¢80¢5¢
Swedes Iron Carpet.....	80¢80¢5¢
American Iron Cut.....	75¢75¢10¢
Swedes Iron.....	75¢5¢75¢10¢
Swedes Iron, Upholsterers.....	75¢10¢75¢10¢5¢
Tinned Swedes Iron.....	75¢10¢75¢10¢5¢
Tinned Swedes Iron, Upholsterers.....	75¢10¢75¢10¢5¢
Gimp and Lace.....	75¢10¢75¢10¢5¢
Tinned Gimp and Lace.....	75¢10¢75¢10¢5¢
Swedes Iron Trimmers.....	75¢10¢75¢10¢5¢
Swedes Iron Miners.....	75¢10¢75¢10¢5¢
Swedes Iron Bill Posters or Railroad.....	75¢10¢75¢10¢5¢
Swedes Steel (Swedes Iron price list).....	80¢80¢5¢
Copper Tacks.....	50¢10¢
Copper Finishing Trunk and Clout Nails.....	50¢10¢
Finishing Nails.....	70¢10¢70¢10¢10¢
Trunk and Clout Nails.....	70¢10¢70¢10¢10¢
Tinned Trunk and Clout Nails.....	70¢10¢
Blanket Nails.....	70¢10¢70¢10¢10¢

Common and Patent Brads, 70¢10¢70¢	
Hungarian Nails.....	70¢10¢70¢10¢10¢
Chair Nails.....	70¢10¢70¢10¢10¢
Zinc Glaziers' Points.....	50¢50¢5¢
Cigar Box Nails.....	50¢10¢50¢10¢5¢
Picture-Frame Points.....	50¢10¢50¢10¢5¢
Looking-Glass Tacks.....	50¢10¢50¢10¢5¢
Leathered Carpet.....	50¢10¢50¢10¢5¢
Brush Tacks.....	50¢10¢50¢10¢5¢
Shoe Finders, List Jan. 2, 1888.....	10¢10¢5¢

Lining and Saddle Nails, List Jan. 1, 1886.	
Silvered.....	30¢10¢10¢
Japanned.....	20¢10¢10¢
Double-Pointed Tacks.....	85¢
Wire Carpet Nails.....	50¢10¢
Wire Brads & Nails, see Nails, Wire.....	
Steel-Wire Brads, K. & E. Mfg. Co's list.....	50¢10¢

Tap Borers—

Common and Rind.....	20¢10¢
Ive's Tap Borer.....	33½¢5¢
Enterprise Mfg. Co.....	20¢10¢30¢
Clark's.....	33½¢35¢

Tapes, Measuring—

American.....	25¢10¢
Spring.....	40¢
Chesterman's, Regular list.....	25¢30¢

Thermometers—

Tin Case.....	80¢80¢10¢
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Thimble Skins—See Skins.

Ties, Bale—Steel

Standard Wire, list.....	50¢10¢5¢
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Tinners' Shears, &c.—

Shears and Snips (P. S. & W.).....	20¢25¢
Punches, see Punches.....	
Snips, J. Mallinson & Co.....	33½¢

Tinware—

Stamped, Japanned and Plated, list Jan. 20 1887.....	75¢75¢5¢
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Tire Benders, Upsetters, &c.—

Stoddard's Lightning Tire Upsetters.....	15¢
Detroit Perfect Tire Bender.....	15¢

Tobacco Cutters—

Champion.....	20¢10¢30¢
Wood Bottom.....	20¢ \$5.00 25¢
All Iron.....	20¢ \$4.25
Nashua Lock Co's.....	20¢ \$18.00 50¢55¢
Sargent's.....	55¢
Acme.....	20¢ \$20.00, dis 40¢

Transom Lifters—

Wollensak's.....	
Class 3 and 4, Bronzed Iron.....	50¢
Class 3 and 4, Bronze Metal.....	25¢
Class 3 and 4, Brass.....	35¢
Skylight Lifters.....	35¢
Crown, Eagle and Shield.....	50¢
Rehder's.....	
Bronzed Iron Rods, list Jan. 1, 1887.....	50¢2¢
Real Bronze or Nickel Plate.....	50¢2¢
Excelsior.....	50¢10¢2¢
Shaw's.....	50¢10¢
Payson's Universal.....	40¢40¢10¢

Traps—

Game—	
Newhouse.....	35¢40¢5¢
Onida Pattern.....	70¢70¢5¢
Game, Blake's Patent.....	40¢10¢5¢
Mouse and Rat—	
Mouse Wood, Choker, 7 doz holes, 11½ doz.....	11¢12¢
Mouse, Round Wire.....	20¢ \$1.50, 10¢
Mouse, Cage, Wire.....	20¢ \$2.50, 10¢
Mouse, Catch-em-alive.....	20¢ \$2.50, 15¢
Mouse, "Bonanza".....	20¢ \$10.00 net
Mouse Delusion.....	20¢ \$18.00, 15¢
Rat, "Decoy".....	20¢ \$10.00, 10¢
Ideal.....	20¢ \$10.00
Cyclone.....	20¢ \$5.25
Hotchkiss Metallic Mouse, 5-hole traps.....	20¢ \$90¢
In full cases.....	20¢ \$75¢

Trowels—

Lothrop's Brick and Plastering.....	25¢
Reed's Brick and Plastering.....	15¢
Diston's Brick and Plastering.....	25¢25¢10¢
Peace's Plastering.....	25¢
Clement & Maynard's.....	20¢
Rose's Brick.....	15¢20¢
Brade's Brick.....	25¢
Worral's Brick and Plastering.....	20¢
Garden.....	70¢

Triers—

Butter and cheese.....	25¢
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Trucks, Warehouse, &c.—

B. & L. Block Co.'s list, '82.....	40¢
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Tubes, Boiler—

See Pipe.....	
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Twine—

No. 18, 1/4 and 1/2 B. Balls.....	18c	28
No. 24, 1/4 and 1/2 B. Balls.....	18c	28
No. 36, 1/4 and 1/2 B. Balls.....	16c	27
No. 24, Mattress, 1/4 and 1/2 B. Balls.....	18c	50
Chalk Line, Cotton, 1/4 and 1/2 B. Balls.....		25
Mason Line, Linen, 1/4 and 1/2 B. Balls.....		55
2-Ply Hemp, 1/4 and 1/2 B. Balls (Spring Twine).....		11c
3-Ply Hemp, 1/4 B. Balls.....	12c	12c
3-Ply Hemp, 1/2 B. Balls.....	11c	11c
Cotton Wrapping, 5 Balls to a Doz.....	15c	16
2, 3, 4 and 5-Ply Jute, 1/2 B. Balls.....		10
Wool.....	6c	6c
Paper.....	13c	14
Cotton Mops, 6, 9, 12 and 15 in. to doz.....		18

CURRENT METAL PRICES.

MARCH 6, 1889.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market reports.

IRON AND STEEL.

Bar Iron from Store.

Common Iron:	
3/4 to 2 in. round and square...	1/2 lb 1.90 @ ...
1 to 6 in. x 3/4 to 1 in.	1/2 lb 2.00 @ 2.10
Refined Iron:	
3/4 to 2 in. round and square...	1/2 lb 2.20 @ 2.30
1 to 6 in. x 3/4 and 5-16	1/2 lb 2.20 @ 2.30
4 1/2 to 6 in. x 3/4 to 1 in.	1/2 lb 2.20 @ 2.30
Rods—3/4 and 1 1/2 round and sq.	1/2 lb 2.20 @ 2.30
Bands—1 to 6 x 3-16 to No. 12	1/2 lb 2.20 @ 2.30
"Burden Best" Iron, base price.	1/2 lb 3.00 @ ...
Burden's "H. B. & S." Iron, base price.	1/2 lb 2.80 @ ...
"Ulster"	1/2 lb 3.10 @ ...
Norway Rods	1/2 lb 4.00 @ 5.00

Merchant Steel from Store.

Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots.	2 1/2¢
Best Cast Steel, base price in small lots.	8 1/2¢
Best Cast Steel Machinery, base price in small lots.	5¢

Sheet Iron from Store.

Common American. R. G. Cleaned.	
10 to 16	1/2 lb 2.75 @ 2.80
17 to 20	1/2 lb 2.85 @ 3.00
21 to 24	1/2 lb 3.00 @ 3.10
25 and 26	1/2 lb 3.20 @ 3.50
27	1/2 lb 3.35 @ 3.75
28	1/2 lb 3.50 @ 4.00
B. B.	2d qual.
Galv'd, 14 to 20, 1/2 lb, 4.50 @ ...	4.38 @ ...
Galv'd, 21 to 24, 1/2 lb, 4.87 1/2 @ ...	4.75 @ ...
Galv'd, 25 to 26, 1/2 lb, 5.25 @ ...	5.12 @ ...
Galv'd, 27, 1/2 lb, 5.62 1/2 @ ...	5.48 @ ...
Galv'd, 28, 1/2 lb, 6.00 @ ...	5.85 @ ...
Patent Plinished	1/2 lb A 10¢ B, 9¢
Russia	1/2 lb 9 1/4¢ @ 10¢
American Cold Rolled B. B.	1/2 lb 5¢ @ 7¢

English Steel from Store.

Best Cast	1/2 lb 15¢
Extra Cast	1/2 lb 16 1/2¢
Swaged, Cast	1/2 lb 16¢
Best Double Shear	1/2 lb 15¢
Blister, 1st quality	1/2 lb 12 1/2¢
German Steel, Best	1/2 lb 10¢
2d quality	1/2 lb 9¢
3d quality	1/2 lb 8¢
Sheet Cast Steel, 1st quality	1/2 lb 15¢
2d quality	1/2 lb 14¢
3d quality	1/2 lb 12 1/2¢

METALS.

Tin.

Banca, Pigs	Per lb 23 1/2¢
Straits, Pigs	23¢
English, Pigs	23 1/4¢
Straits in Bars	24¢

Tin Plates.

Charcoal Plates.—Bright. Per box.	
Melny Grade.	
IC, 10 x 14	\$5.75 @ \$6.00
IC, 12 x 12	6.00 @ 6.25
IC, 14 x 20	5.75 @ 6.00
IC, 20 x 28	12.00 @ 12.50
IX, 10 x 14	7.25 @ 7.50
IX, 12 x 12	7.50 @ 7.75
IX, 14 x 20	7.25 @ 7.50
IX, 20 x 28	15.00 @ 15.50
DC, 12 1/2 x 17	5.50 @ 5.75
DX, 12 1/2 x 17	7.00 @ 7.25
Call and Grade.	
IC, 10 x 14	5.75 @ 6.00
IC, 12 x 12	6.00 @ 6.25
IC, 14 x 20	5.75 @ 6.00
IX, 10 x 14	7.25 @ 7.50
IX, 12 x 12	7.50 @ 7.75
IX, 14 x 20	7.25 @ 7.50
Allaway Grade.	
IC, 10 x 14	5.00 @ 5.12 1/2
IC, 12 x 12	5.12 1/2 @ 5.25
IC, 14 x 20	5.00 @ 5.12 1/2
IC, 20 x 28	11.00 @ ...
IX, 10 x 14	6.00 @ ...
IX, 12 x 12	6.25 @ ...
IX, 14 x 20	6.00 @ ...
IX, 20 x 28	12.00 @ ...
DC, 12 1/2 x 17	4.75 @ 5.00
DX, 12 1/2 x 17	5.75 @ 6.00

Coke Plates.—Bright.

Steel Coke.—IC, 10 x 14, 14 x 20.	\$4.75 @ \$5.00
10 x 20	7.25 @ 7.50
20 x 28	9.75 @ 10.25
IX, 10 x 14, 14 x 20	5.50 @ 5.75
BV Grade.—IC, 10 x 14, 14 x 20.	4.40 @ 4.60

Charcoal Plates.—Terne.

Dean Grade.—IC, 14 x 20	\$4.40 @ \$4.62 1/2
20 x 28	9.00 @ 9.25
IX, 14 x 20	4.40 @ 4.62 1/2
20 x 28	11.00 @ 11.37 1/2
Abecarne Grade.—IC, 14 x 20	4.25 @ 4.50
20 x 28	8.50 @ 9.00
IX, 14 x 20	5.25 @ 5.50
20 x 28	10.50 @ 10.80

Tin Boiler Plates.

IX, 14 x 28	112 sheets. \$12.50 @ \$12.75
IX, 14 x 26	112 sheets. 12.75 @
IX, 14 x 21	112 sheets. 14.25 @

Copper.

Duty: Pig. Bar and Ingot, 4¢; Old Copper, 3¢ 1/2 lb. Manufactured (including all articles of which Copper is a component of chief value), 45 ¢ ad valorem	
Ingot.	16 1/2¢ @ 17 1/2¢
Lake	16 1/2¢ @ 17 1/2¢
"Anchor" Brand	16 1/2¢ @ 17 1/2¢

Sheet and Bolt.

Prices adopted by the Association of Copper Manufacturers of the United States, December 10, 1887, being quotations for all sized lots.

Not wider than	Not longer than	And longer than	Weights per square foot and prices per pound.
Over 64 oz.	32 to 64 oz.	16 to 32 oz.	14 to 16 oz.
30	72	25	25
30	72	25	25
36	96	25	25
36	96	25	25
48	96	25	25
48	96	25	25
60	96	25	25
60	96	25	25
84	96	25	25
84	96	25	25
Over 84 in. wide	28	30	30

All Bath Tub Sheets. 16 oz. 14 oz. 12 oz. 10 oz. Per pound. \$0.13 0.30 0.32 0.35

Bolt Copper, 3/4 inch diameter and over, per pound. 20¢

Circles, 60 inches in diameter and less, 3 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Circles over 60 inches diameter, up to 96 inches diameter, inclusive, 5 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Circles over 96 inches diameter, 6 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Segment and Pattern Sheets, 3 cents per pound advance over price of sheets required to cut them from.

Cold or Hard Rolled Copper, 14 ounces per square foot and heavier, 1 cent per pound over the foregoing prices.

Cold or Hard Rolled Copper, lighter than 14 ounces per square foot, 2 cents per pound over the foregoing prices.

Copper Bottoms, Pits and Flats.

14 ounce to square foot and heavier. 28¢

12 ounce and up to 14 ounce to square foot. 30¢

10 ounce and up to 12 ounce. 31¢

Circles less than 8 inches diameter 2 cents per pound additional.

Circles over 13 inches diameter are not classed as Copper Bottoms.

Tinning.

Tinning sheets on one side, 10, 12 and 14 x 48 each. 8¢

Tinning sheets on one side, 30 x 60 each. 30¢

For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each. 15¢

For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each. 12¢

For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.), each. 12¢

Tinning sheets on one side, other sizes, per square foot. 2 1/2¢

For tinning both sides double the above prices.

Planished Copper List May 5, 1888.

Planished Copper List May 5, 1888. Net

Brass and Copper Tubes.

Seamless Copper. 50¢

Seamless Brass. 47¢

3/4 inch 1/2 lb. 44¢

1/2 inch 1/2 lb. 42¢

3/8 inch 1/2 lb. 40¢

1/4 inch 1/2 lb. 38¢

1/8 inch 1/2 lb. 36¢

1/16 inch 1/2 lb. 34¢

Roll and Sheet Brass.

Discount from list. 10 @ 15 ¢

Spelter.

Duty: Pig. Bars and Plates, \$1.50 100 lb. 54¢ @ 54 1/2¢

Western Spelter